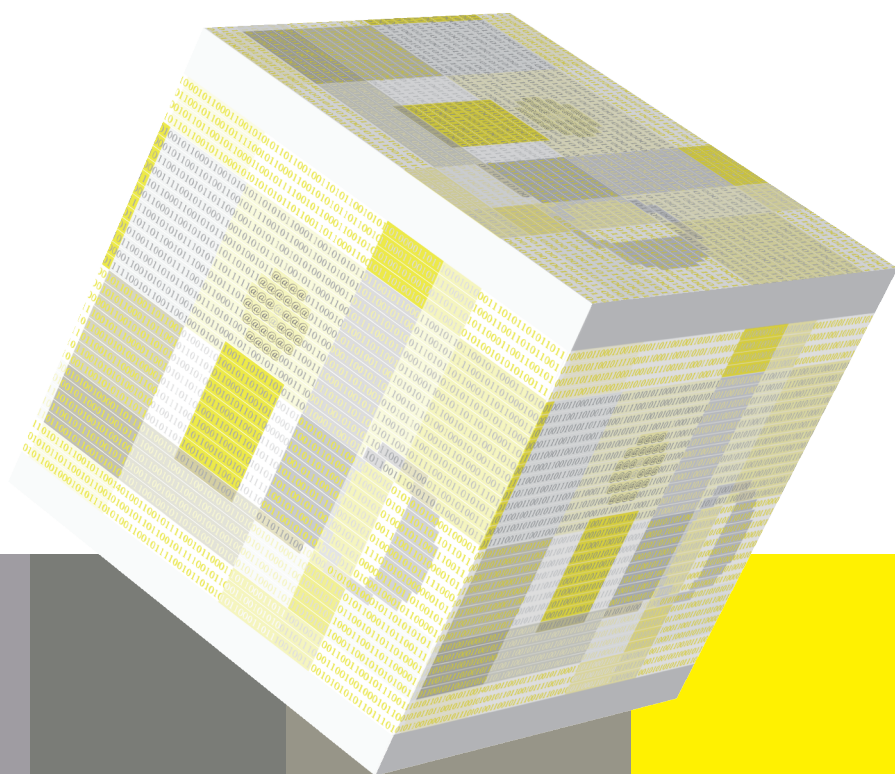
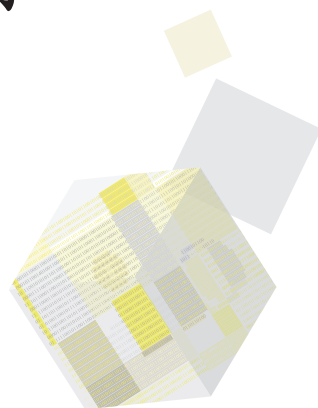


# 教育資料與圖書館學

JOURNAL OF EDUCATIONAL MEDIA &  
LIBRARY SCIENCES

第五十六卷 第三期 二〇一九年  
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教育資料與圖書館學，始於1970年3月創刊之教育資料科學月刊，其間於1980年9月更名為教育資料科學，並改以季刊發行。自1982年9月起易今名。另自2016年11月起，改以一年出版三期（3月、7月、11月）。現由淡江大學出版中心出版，淡江大學資訊與圖書館學系和覺生紀念圖書館合作策劃編輯。本刊為國際學術期刊，2008年獲國科會學術期刊評比為第一級，2015年獲科技部人文社會科學研究中心評定為教育學門專業類一級期刊。並廣為海內外知名資料庫所收錄(如下英文所列)。

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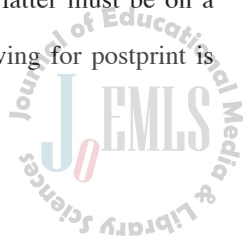
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# 教育資料與圖書館學

第56卷 第3期 二〇一九年

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## EDITORIAL

# Thoughts on Manuscript Citation Formats of DOI and ORCID

Our journal has adopted Chicago Turabian and APA styles for accommodating citation formats used by scholars across library and information science, and humanities and social sciences. In our issues of recent years, it shows that scholars using APA style have outnumbered the ones using Chicago Turabian style, suggesting a shifting trend of studied topics in library and information science field. The newly published *Public Manual of the American Psychological Association*, 7th edition (2020), is a new edition since the sixth edition of ten years ago, with additions of Digital Object Identifier (DOI) and Open Researcher and Contributor Identifier (ORCID) in Author Note on title pages. In the former sixth edition of APA, a notable space was attributed to introduce syntactic structures and functions of DOI, and an announce was made to use DOI as the first priority choice for website addresses of electronic texts. In the present seventh edition, the adoption of DOI seems even more a matter of fact. In the other hand, the newest Chicago Turabian style is the ninth edition of year 2018, but early in the seventh edition of 2007, it had made clear DOI's precedence.

The reason for using DOI, not a regular URL, as website addresses, is to make sure that availability and accessibility of cited literature could be permanently maintained with an effective management and operation system. Thus through international authoritative citation formats and academic writing manuals, such as APA or Chicago Turabian styles, we can clearly see that DOI has outweighed others and become an international standard as the only manuscript identifier number system. Likewise, in the future the use of ORCID will also be a phenomenon in the international academic community. No matter whether we are now prepared or willing to accept these two identifier systems, DOI and ORCID will become necessary approaches for scholars to join the international academic community.

In this issue (Issue 3, Volume 56), twelve manuscripts have gone through the review process. Four manuscripts have been accepted, with a rejection rate of 66.7%. The articles published in this issue include: "Using Visual Methods to Explore How Students in Information-Related Fields Express the Concept of 'Information'" by Tien-I Tsai, "A Comparative Analysis of English Abstracts and Summaries of Chinese Research Articles Indexed by the Taiwan Social Science Citation Index: Arts Education, Sports & Exercise, and Management Journals

as Examples” by Min-Chun Ku, and “The Application of Quality Talks on the ePUB3 eBook-Based Flipped Design and Teaching of ‘Reading Comprehension’ Courses” by Tina Pingting Tsai, Chingsheng Hsu, and Jyhjong Lin, and “International Students’ Tutoring Experiences and Cultural Awareness in the Digital Learning Companion Project” by Sarah Otanga et al. It is worth noting that some articles in this issue have been published through the open peer review mode “Open Point” with author’s and reviewer’s reconsents to make part of peer reviews public. Special thanks are dedicated to the reviewer and author.

Jeong-Yeou Chiu  
*JoEMLS* Chief Editor





## 編者言

# DOI與ORCID使用於論文引文格式之啟示

教育資料與圖書館學(本刊)向來採用雙引文格式(Chicago Turabian與APA),廣泛接納來自於跨圖資學領域,且分屬人文社會學科學者的引文格式使用習慣。近年來,本刊使用APA格式的學者日增,並已多於採用Turabian格式者。此趨勢正可充分說明了圖資學門研究主題領域的遞變。新近出版的2020年APA格式第七版(*Public Manual of the American Psychological Association, 7th edition*)距離第六版已相隔10年,如今新版再次就「數位物件識別碼」(DOI);以及增列「開放的研究員和貢獻者識別碼」(ORCID)於題名頁(title page)的「作者說明」(Author Note)欄內。就DOI而言,APA第六版以極明顯篇幅介紹其語法結構及功能,並宣告優先引用DOI碼,作為電子文獻網址的首選;而至此第七版,DOI的採用更為平常且臻於成熟。相對於此,Chicago Turabian引文格式目前最新版本為2018年的第九版,其實Chicago Turabian早在2007年第七版即已宣告DOI的優先性。

舉凡種種,優先引用DOI而非一般URL網址的原因,乃在於確保在有效的管理營運制度之下,使被引用文獻的可得性(availability)與可及性(accessibility)得以永久維繫。因此,透過APA或Chicago Turabian此類國際權威的引文格式與寫作規範工具書,我們理當更能清楚了解DOI已儼然成為國際主流通用標準,遠勝於其它相關的文獻唯一識別碼系統。同理,未來ORCID的應用也會在國際學術同儕間取得一席之地。不論你我是否習慣或願意接受這兩項識別工具,DOI連同ORCID的採用都將成為學者們唯一的國際化必要手段。

此卷期(56卷3期)總計12篇稿件完成評閱流程,接受刊登其中4篇文章,退稿率為66.7%。本卷期刊登大作分別為:Tien-I Tsai的“Using Visual Methods to Explore How Students in Information-Related Fields Express the Concept of ‘Information’”,以及Min-Chun Ku的“A Comparative Analysis of English Abstracts and Summaries of Chinese Research Articles Indexed by the Taiwan Social Science Citation Index: Arts Education, Sports & Exercise, and Management Journals as Examples”;還有蔡娉婷、許慶昇、林至中發表的「深度討論應用於ePUB3電子書翻轉式閱讀理解學習之課程設計與教學實務」、Sarah Otanga等四位發表的“International Students’ Tutoring Experiences and Cultural Awareness in the Digital Learning Companion Project”。本期部分審查內容同意經由本刊以開放式同儕評閱「開放觀點」(Open Point)呈現,特以向審查者與作者致意。

邱炯友

教育資料與圖書館學 主編







# Using Visual Methods to Explore How Students in Information-Related Fields Express the Concept of “Information”

Tien-I Tsai

## Abstract

*This study used a visual method to explore how 219 undergraduate and master's students in library and information science, information management, and computer science perceive the concept of “information” through drawing and writing. Through content analysis, the researcher examined the elements and meanings appeared in the participant-drawn pictures, namely, the iSquares. The findings showed that while types of iSquares are somewhat similar among students from different fields of study, the elements used to express the concept of information are quite different. The complexity of the compositions and the perspectives are also different. Students in library and information science tend to use more complex compositions, and include the image of people and print materials as elements in their iSquares. They tend to use various metaphors to express the concept of information, and address issues related to uncertainty, information seeking process, or information hierarchy. In contrast, students in information management tend to address issues related to big data, and students in the computer science tend to present the concept of information with a relatively simple composition including tools and equipment. Based on the findings, the current study provides pedagogical and research suggestions.*

**Keywords:** Visual methods, Information science, College students, Information

## Introduction

Individuals interact with information every day. Students in information-related fields not only interact with information for everyday-life purposes but also tackle the issues regarding information in their coursework and research. According to the list of departments in higher education from the Ministry of Education (2018), the major fields of study related to information include library and information science (LIS), information management (IM), and computer science (CS). Among them, the field of library and information science comes from the traditional library science with the development of science and technology, focusing on the creation, collection, organization, preservation, and dissemination of various information (Department and Graduate Institute

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of Library and Information Science, National Taiwan University, n.d.; Hu & Wang, 2003; Lai, 2001); the field of information management has evolved with the development of science and technology, mainly focusing on the application of information systems to assist management, as well as the management of information systems (Department of Information Management, National Taiwan University, n.d.); the field of computer science focuses on development and application of information technology (Department of Computer Science and Information Engineering, National Taiwan University, n.d.).

Although students and scholars in all these disciplines study “information”, they may study information from very different perspectives. Navigating through fundamental textbooks and syllabi of information-related fields (National Taiwan University, n.d.), the concept of information is mostly briefly discussed. Despite that library and information science courses may spend a unit on the topic of “information”, information management and computer science courses typically dive into the structure or the application of information. Examining how students in the above three fields view “information” may not only help us better understand perceptions of students’ with different types of training but also illustrate the concept of information in fuller ranges.

“iSquare” developed by Hartel since 2011 (Hartel, n.d.) is a visual method to study how people perceive the concept of information; it is, at the same time, a pedagogy to help instructors address this concept. Hartel (2014a, 2014b) used this draw-and-write technique asking students to express the concept of “information” through drawing on a small square blank paper with a brief textual description on the back side of the paper; these studies discussed images based on Engelhardt’s (2002) types of graphic presentations and analyzed information behavior concepts appearing when students present the concept of information. More recently, Hartel tried to examine iSquares with different data analysis methods. Hartel (2015, 2017) proposed four methods for analyzing iSquares; Hartel and Savolainen (2016) discussed iSquares with pictorial metaphor analysis. Hartel et al. (2018) discussed the implementation of iSquares and proposed specific data collection and analysis methods for iSquares research. This draw-and-write technique has also been applied to different cultural settings (e.g., Ibekwe-SanJuan, 2017; Tsai, 2015) and used to explore other concepts (e.g., Ibekwe-SanJuan, 2018).

iSquare research is growing but still in its developing stages. Based on Hartel (2014a), Tsai (2015) attempted to use this visual method to explore the information stories of 56 LIS students. The study used thematic analysis to examine the elements appeared (e.g., image of people, media and tools, the nature and other contextual elements) and the concepts presented on iSquares (such as

information theory and the concept of information behavior, the characteristics of huge amounts of data); based on the themes appearing in the iSquares, stories of information were illustrated in four different ways: 1. from micro-social to macro-social/from imperceptibly small to vast, as suggested by Hartel (2014a); 2. from concrete descriptions to abstract metaphors/from external to internal; 3. from static to mobile/from trickling to rapid; 4. from unorganized to organized/uncertain to confident. The current study aims to extend relevant studies and examine how students in information-related fields perceive the concept of information through drawing and writing on the iSquares, as well as how similar or different their iSquares are. The research questions include:

1. How do students in information-related fields express the concept of “information” through drawing and writing?
2. How similar or different are the elements used in students’ iSquares across information-related fields? And how similar or different are their perspectives?

## Literature Review

In order to delineate how to approach the fundamental question of “what is information” through iSquare as a visual method, the literature review starts from defining the concept of information based on dictionaries and textbooks in information-related fields, followed by iSquare as a visual method and the current state of relevant empirical studies in the field of LIS.

### Defining the Concept of Information

Information is a common vocabulary in our daily lives, but it is one that “being used widely but inaccurately” (Wang & Hsieh, 2014, p. 5). According to Wang and Hsieh, information is a collection of statements, opinions, facts, concepts, or ideas between the raw data and knowledge; it can be any processed data and is often obtained through communication, research, teaching, observation, and so on. Tsai (2015) also pointed out that most dictionaries do not distinguish the concepts of data, information, and knowledge, and define information in a simple but general way, except for a few emphasizes that information need to be processed or helpful to individuals. For instance, *Longman Dictionary of Contemporary English* and *Cambridge Dictionary* focus more on the factual information; *Collins English Dictionary*, *Merriam-Webster Dictionary*, and *Oxford English Dictionary* emphasize knowledge learned and experienced (Information, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e).

Interestingly, when investigating the definition of information from the textbooks of information-related fields, we can easily see different emphases in the three information-related fields. Many LIS textbooks introduce the DIKW

hierarchy when defining information, and the textbooks also discuss different perspectives of information (e.g., Lai, 2001; Wang & Hsieh, 2014). Some also introduce Buckland's (1991) perspectives when discussing the nature of information—information as process, information as knowledge, and information as thing, and distinguish the idea of tangible versus intangible, entity versus process (e.g., Lai, 2001). Buckland's information-as-process focuses on the intangible process of cognitive change, or the process of messages delivering through physical items such as books or documents. Information-as-process focuses on the intangible process of cognitive change, or the process of messages delivering through physical items such as books or documents. Information-as-knowledge focuses on the intangible nature of information, emphasizing what information intellectually giving to people. Information-as-thing focuses on the tangible nature of information, emphasizing the physical object itself such as books or documents. Other LIS textbooks also discuss information from a viewpoint of communication by introducing Shannon and Weaver's (1949) classic work, emphasizing that messages are delivered from a sender to a receiver through a certain channel (e.g., Bawden & Robinson, 2013; Debons, 2008; Lai, 2001).

On the contrary, IM and CS textbooks typically spend much less emphasis on introducing the concept of information. Several IM textbooks define information as meaningful and useful messages that are transformed or processed from data (Chu, 2017; Laudon & Laudon, 2018; Long, 2003). These textbooks tend to emphasize the linear procedure turning raw data into meaningful information with a few sentences to make this simple distinguish, and focus more on information systems and information technologies while introducing the basic concepts of information management. Others do not provide formal definitions or discussions regarding the concept of information (e.g., Hsieh & Wu, 2009; Lin, 2010; Wu, 2015). In CS textbooks, they typically don't formally define information and dive into concepts regarding data type, data structure, algorithm, hardware, and so on (e.g., Cormen, Leiserson, Rivest, & Stein, 2009; Karumanchi, 2017). These different emphases may help us better understand students' perceptions on information later in the discussion section.

### **Visual Methods and iSquare Research**

Visual methods can be all uses of images for research, with or without accompanying words and whether pre-existing or generated as part of the research process (Payne & Payne, 2004). The images can either be pictures, photographs, video, or film, etc., and a simple classification can be made based on the source of images— 1. images produced by the researcher, and 2. images produced or found by the participants (Jupp, 2006). According to Jupp, visual methods offer



the knowledge that cannot be communicated verbally or in written words, and add a new dimension to qualitative research. Research that employs visual methods relies on collecting and analyzing visual data such as drawings, photos, videos, films, and visual arts (Banks, 2001, 2007; Spencer, 2011). When using visual methods to explore a specific concept, participant-draw pictures are often used; this approach has been used a lot on school children and can also be applied to different populations ranging from college students, adults, and the elderly (Copeland & Agosto, 2012).

In the field of LIS, an increasing number of studies have been applying in many different ways recently (Hicks & Lloyd, 2018). Hicks and Lloyd also pointed out that applying visual methods can help to bring up more in-depth discussions in the field. Compared to other fields in social sciences, the use and development of visual methods in LIS research happened relatively late. It is not until the recent decade that visual methods received attention, and Hartel’s iSquares can be seen as one of the important recent starts of using visual methods in LIS research.

In 2011, Hartel developed iSquares as a pedagogical approach and a research approach to explore how students perceive the concept of information (Hartel, n.d.). It is a visual method with participant-drawn images with texts but without verbal narratives (Hartel, 2014a). Hartel (2014a) used this draw-and-write technique to explore the same question—what is information—with 137 iSchool graduate students and examined each iSquare and categorized them with different types of graphic representation based on Engelhardt (2002). Hartel found these iSquares were composed mainly in picture, link diagram, and grouping diagram. Hartel (2014b) then focused on the information behavior concept addressed in 293 iSquares from graduate students in information and museum studies. Through deductive theme analysis, Hartel (2014b) examined information behavior concepts appearing in the iSquares, and found that print artifacts, information technologies, abstractions and patterns, symbols, and the nature were used to express the idea. Images of people were presented through hands, the brain, a person thinking, a twosome in information exchange, and an information-rich social world.

Tsai (2015) attempted to explore students’ perceptions of information through iSquares with 56 LIS students. The study used thematic analysis to examine the elements appearing in the iSquares and identified three main categories: 1. Image of people, 2. media and tools, 3. the nature and contextual elements. Meanwhile, the perspectives based on Buckland’s (1991) views of information and the concept of information behavior, as well as characteristics of big data (i.e., volume, velocity, and variety) were also identified to form four different versions of information stories.

More recently, Hartel (2015) proposed four methods for analyzing iSquares, including compositional interpretation, thematic analysis, content analysis, and pictorial metaphor analysis. However, it is a brief conference abstract without details. Hartel and Savolainen (2016) further discussed the concept of information using iSquares with pictorial metaphor analysis, and found iSchool students used a wide variety of elements in the metaphor—the earth, net, tree, light bulb, box/box, cloud, seed, sun, ocean/boat, fishing/mining. Hartel (2017) then developed the iSquare protocol with its detailed procedure, and reiterate the four data analysis methods for iSquare research. Specifically, an example of ongoing International iSquare research with content analysis was introduced. The coding scheme were also introduced, and items in the coding scheme included print artifacts, information behavior, ICTs, information structures and organizations, and the settings.

Overall, iSquare research using participant-drawn images as a visual method has been mostly conducted with students in LIS/iSchool. While different data analysis methods have been applied in empirical research for different purposes, on-going content analysis iSquare research seemed to be still underway and require further endeavors to expand iSquare research. The current study developed a codebook for content analysis based on the above literature so that iSquares from students with different backgrounds can be easily compared.

## **Methods**

The purpose of the current study is to examine how students perceive the concept of “information” through drawing and writing. An arts-informed qualitative method was used to collect data. In order to systematically compare and contrast students’ perceptions across three information-related fields, content analysis was used to analyze the data.

### **Data Collection**

The current study used a visual method—iSquares—to explore the concept of information perceived by 219 undergraduate and graduate students from the Department of Library and Information Science, Information Management, and Computer Science & Information Engineering at a large public research university in Northern Taiwan. With instructors’ permissions, students were recruited from a required course from each department. As suggested by Hartel, the best occasion for an iSquare activity is in classroom settings. Therefore, the researcher scheduled a time with the instructors and collected the iSquares in the above courses.

This study follows Hartel’s (2014a) iSquare protocol and used iSquare as the research instrument. A 4.25 square-inch white drawing paper with one blank

side and the other printed instructions. Students were briefly introduced with the research, and then asked to use approximately ten minutes to draw on the blank side and describe their drawings with texts, as well as answer the demographic questions, including gender, age, and program, on the reverse side. To ensure the reliability of the current study, the researcher also provided black pens to the students with the iSquare paper. The researcher finally concluded the activity and finished the data collection procedure. Additionally, the researcher also kept field notes for each iSquare activity for each course.

Participants

Students who participated in the current study included 138 undergraduate and 81 graduate students from the Department of Library and Information Science (31.05%), Information Management (33.33%), and Computer Science & Information Engineering (35.62%; see Table 1). While most LIS students are female (80.6%), more IM students are male (66.7%), and CS students are mostly male (86.5%). The gender distribution roughly reflects the student population in each department. As to the age, almost all students are between 19 and 25 (93.61%) with an average of 21.67 (*SD* = 2.98).

Table 1 Participants’ Demographics (N = 219)

Demographics		Number of participants	Percentage (%)
Gender	Male	125	57.08
	Female	88	40.18
	Choose not to identify	6	2.74
Age	19-20	103	47.03
	21-22	54	24.66
	23-25	47	21.46
	Over 25	12	5.48
	Blank	2	.91
Field of Study	Library and Information Science (LIS)	68	31.05
	Information Management (IM)	73	33.33
	Computer Science (CS)	78	35.62
Level of Study	Undergraduate	138	63.01
	Graduate (Master’s level)	81	36.99

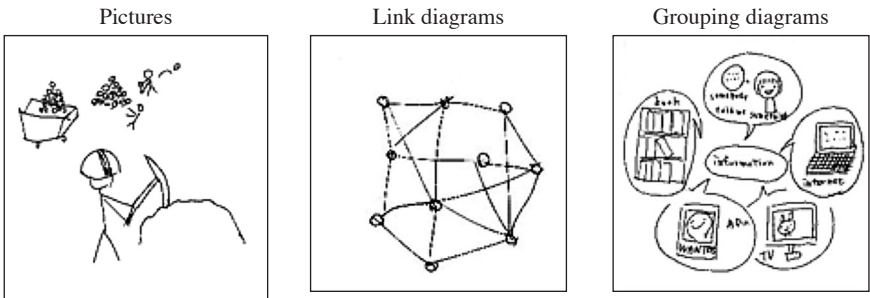
Data Analysis

Content analysis is a systematic approach, which aims to analyze the content characteristics of data quantitatively, and to some extent, can reach inferences beyond descriptive analysis (Neuendorf, 2002). It can systematically examine and compare the contents appearing in visual data (Rose, 2007), including iSquares (e.g., Hartel, 2015, 2017). The purpose of this study is to explore how students in information-related fields perceive and present the concept of “information”. Through content analysis, iSquares from the three departments

can be systematically compared and contrast. While data analysis was conducted mainly based on the drawings, supplemented by text, the unit of analysis is the iSquare by each student. All information on each iSquare (both drawings and texts) by each student was viewed as one unit.

The codebook of the current study was developed mainly based on previous studies (Hartel, 2014b; Tsai, 2015) and the International iSquare Study (<http://www.isquares.info/international-isquare-study.html>). In addition to the demographics (i.e., gender, age, program, degree), the codebook with 25 questions was divided into two major parts: 1. composition and elements; 2. perspectives and meanings of the information concept. Regarding the composition, basic types of graphic presentations are based on the ten categories proposed by Engelhardt (2002), and other composition and element questions came from the International iSquare Study and Hartel (2017); the perspectives and meanings are mainly derived from the findings of Tsai (2015) and the International Study.

As to the graphic presentation, each iSquare was categorized into one specific graphic presentation (e.g., picture, link diagram, or grouping diagram) according to its major composition. If the iSquare drawing contains multiple graphic presentations (such as groups, links and texts), the texts on the other side of the iSquare would be used to help identify the major composition. Figure 1 presents the iSquares that were identified as the three major graphic presentations—pictures, link diagrams and grouping diagrams.



**Figure 1 Three Major Types of iSquare Graphic Presentations**

According to Tsai (2015), three major elements appearing in LIS students’ iSquares include: 1. the image of people, 2. media and tools, 3. the nature and other contextual elements. In order to be more specific to develop the codebook for content analysis, the current study used “information and communications technology (ICT)” and “print materials/artifacts” instead of “media and tools”. And used “scenes” instead of “the nature and other contextual elements”. When coding the elements in the iSquares, the researcher looked into the drawing to identify the aforementioned elements, and then consult the texts on the other side

to make sure it was accurately interpreted. When coding the perspectives and meanings of the information concept, the researcher relied even more on the texts to ensure not over interpreting the iSquares.

The study codebook has undergone three major revisions and several minor adjustments. During the three revisions, approximately 5%, 8%, and 10% of total iSquares (i.e., 12, 18, and 21 iSquares) were sampled for codebook testing. Testing samples were evenly distributed from each discipline (i.e., 4, 6, 7 each). The researcher and two other coders with LIS background conducted the pre-tests. According to Kassarian (1977), the ideal inter-coder reliability should be greater than 85%. The inter-coder reliability of current study increases from the initial 83% to 92%. Chi-square tests were conducted for each item to see whether or not students from different disciplines present their iSquares differently.

Findings

The iSquares collected in the current study were analyzed based on their compositions, elements, perspectives and meanings, as described in the Methods section. Findings regarding how similar or different regarding the elements appearing in the iSquares and the perspectives and meanings are described as follows:

Compositions of the iSquares

The current study examined the type and complexity of the compositions of the iSquares across disciplines. No significant difference was found in the type of iSquares. Students in all information-related fields typically used pictures or link diagrams to depict the concept of information, and some used either grouping diagrams or written texts (Table 2). Nevertheless, the complexity of iSquares created by students in different fields are very different [ $\chi^2(4, N = 219) = 42.786, p < .001$ ].

Table 2 Composition of iSquares across Information-Related Fields

Composition	Field of study	Distribution
Type	LIS	Picture = Link Diagram > Grouping Diagram > Written Text > Symbol <sup>#</sup>
	IM	Picture > Link Diagram > Written Text > Grouping Diagram > Symbol = Blank
	CS	Picture > Link Diagram > Written Text > Grouping Diagram > Symbol > Blank
Complexity <sup>***</sup>	LIS	High = Medium > Low
	IM	Medium > Low > High
	CS	Low > Medium > High

\*\*\*p < .001.  
Note: LIS represents library and information science;  
IM represents information management;  
CS represents computer science; <sup>#</sup>no blank iSquare.



As to the types of iSquares, most students used pictures (43.8%) or link diagrams (28.8%) as the main composition. While Tsai (2015) and Hartel (2014a) were conducted only with students in the department of LIS and iSchool, the overall distribution in the current study is somewhat similar to the findings of Tsai (2015) and Hartel (2014a; see Table 3). The majority of the students used either pictures or link diagrams to present the iSquares. LIS students in the current study especially liked to use link diagrams; IM and CS students seemed to prefer written texts.

**Table 3    Type of iSquares in the Current Study and Relevant Studies** (all in %)

Type of iSquares	All students in current study (N = 219)	LIS students in current study (n = 68)	LIS undergraduate students in Tsai (2015) (N = 56)	iSchool graduate students in Hartel (2014a) (N = 137)
Picture	43.8	39.7	50	52
Link diagram	28.8	39.7	23	24
Written text	14.2	7.4	9	6
Grouping diagram	9.1	10.3	11	7
Symbol	3.2	2.9	4	7
Blank	0.9	0	0	2
Table	0	0	0	2
Total	100.0	100.0	100	100

Although no significant difference was found in types of iSquares across disciplines, IM and CS students shared some similarity, whereas LIS students are unique among the three groups of students. For instance, the percentages of students who used written texts doubled those who used grouping diagrams in both IM and CS (IM 13.7% written texts vs. 6.8% grouping diagrams; CS 20.5% vs. 10.3%). There are also a few valid blank iSquares (with a textual explanation on the back side of their iSquares) from IM and CS students. In contrast, more LIS students (39.7%) than other students (IM 24.7%, CS 23.1%) used link diagrams, and grouping diagrams (10.3%) appeared more than written texts (7.4%) among LIS students. And no LIS students left their iSquares blank.

When examining complexity by the ink ratio and the density of elements based on the 3 by 3 grids for each iSquare, there were more mid-level (44.8%) than low-level ones (30.1%), and only a quarter (25.1%) were identified as high-level ones. However, LIS students tended to use much more complex compositions than other students, and CS students tended to compose their iSquares in a relatively simple way [ $\chi^2(4, N = 219) = 42.786, p < .001$ ]. Specifically, nearly half of LIS students' iSquares (47.1%) were identified as highly complicated, and another half were mid-level. In contrast, nearly half of IM students' iSquares (49.3%) were mid-level, and about one-third (32.9%) were of low complexity. And most CS students' iSquares (48.7%) were low or mid-level in complexity (38.5%). See Table 2 and Table 4.

Table 4 Complexity of iSquares across Disciplines

Complexity	Number of participants (N = 219)	Percentage (%)	LIS (%) (n = 68)	IM (%) (n = 73)	CS (%) (n = 78)
Low	66	30.1	5.8	32.9	48.7
Medium	98	44.8	47.1	49.3	38.5
High	55	25.1	47.1	17.8	12.8

Elements in the iSquares

As to the elements students included in their iSquares, representation elements (e.g., texts, symbols), and conceptual elements (mostly as identified in Tsai, 2015) were examined.

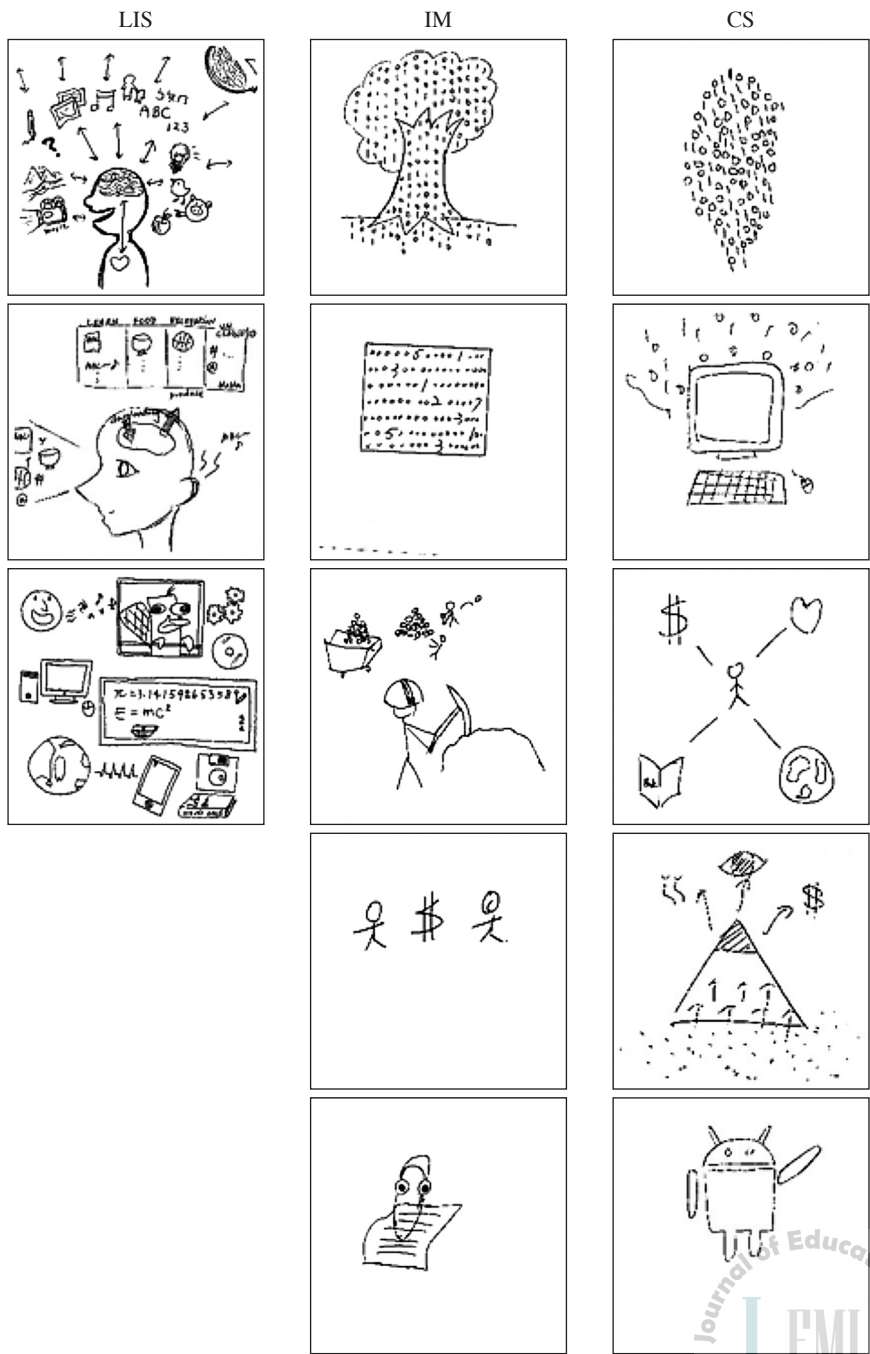
Representative elements in the iSquares

Most students include some types of representative elements (such as texts, symbols, or lines) in their iSquares (86.8%). Among which, about half used texts (53.4%) or arrows/lines (50.2%), and about 30% used symbols or punctuations (30.6%). A quarter used geometric shapes (24.2%). Other representation elements include: tables or charts (15.5%), labyrinth/maze-like lines (12.8%), binary expressions or programming languages (10.5%), speech bubbles (10.5%), thought bubbles (9.1%). A few students included specific social networks with connected people (6.4%) or specific brand names or logos (e.g., Google, Yahoo, Apple, Microsoft; 4.6%), music notations/notes (3.2%), or specific textbook names or subjects (1.4%).

When further investigate the iSquares from students across fields of study, LIS students tended to include more lines or arrows [64.7%;  $\chi^2(2, N = 219) = 8.733, p < .05$ ], dialog boxes [20.6%;  $\chi^2(2, N = 219) = 11.441, p < .01$ ] and thought bubbles [16.2%;  $\chi^2(2, N = 219) = 6.766, p < .05$ ] in their iSquares; IM and CS students tended to include binary codes (0101) or any expressions of programming languages [20.5%;  $\chi^2(2, N = 219) = 14.622, p = .001$ ] in their iSquares. Some IM and CS students also included dollar signs or other representation of money; others used commercial brands, icons or logos to represent “information” (Figure 2).

Conceptual elements in the iSquares

As shown in Table 5, nearly half of the students included the image of people (47.0%) and more than a quarter included some kind of ICT tools (27.9%). About one-fifth included print materials or artifacts (19.2%), and few included a scene (8.7%). Comparing to non-LIS counterparts, LIS students tended to express the image of people [ $\chi^2(2, N = 219) = 17.460, p < .001$ ] and print materials [ $\chi^2(2, N = 219) = 11.121, p < .01$ ]. Regardless of disciplines, few students include elements that show the settings in their iSquares, so no significant difference was found regarding scenes.



**Figure 2 Sample iSquares of Representation Elements by Students in Information-Related Fields**

Note: 1. LIS represents library and information science; IM represents information management; CS represents computer science. 2. No money signs or similar elements appeared in LIS students' iSquares; while a few LIS students used characters for metaphor (see Figure 7), no standalone iconic element appeared in LIS students' iSquares.

Table 5 Conceptual Elements in Students’ iSquares

Conceptual elements	Number of participants (N = 219)	Percentage (%)	LIS (%) (n = 68)	IM (%) (n = 73)	CS (%) (n = 78)
The image of people***	103	47.0	<b>67.6</b>	41.1	34.6
ICT	61	27.9	32.4	24.7	26.9
Print Materials and Artifacts**	42	19.2	<b>32.4</b>	12.3	14.1
Scenes	19	8.7	10.3	11.0	8.7

\*\*  $p < .01$ ; \*\*\*  $p < .001$ .

As to the image of people, students used people, body parts to present this idea (Figure 3). Two-thirds of LIS students (67.6%) used people’s faces or brains to present the image of people; only less than a half of IM students (41.1%) and one-third of CS students (34.6%) present the image of people. Regardless of students’ field of study, half of those who included the image of people presented “thinking” or “human interactions,” and LIS students especially tended to present the idea of “thinking”. LIS students also tended to present “both human and documents” or “both human and non-human sources”. Very few IM and CS

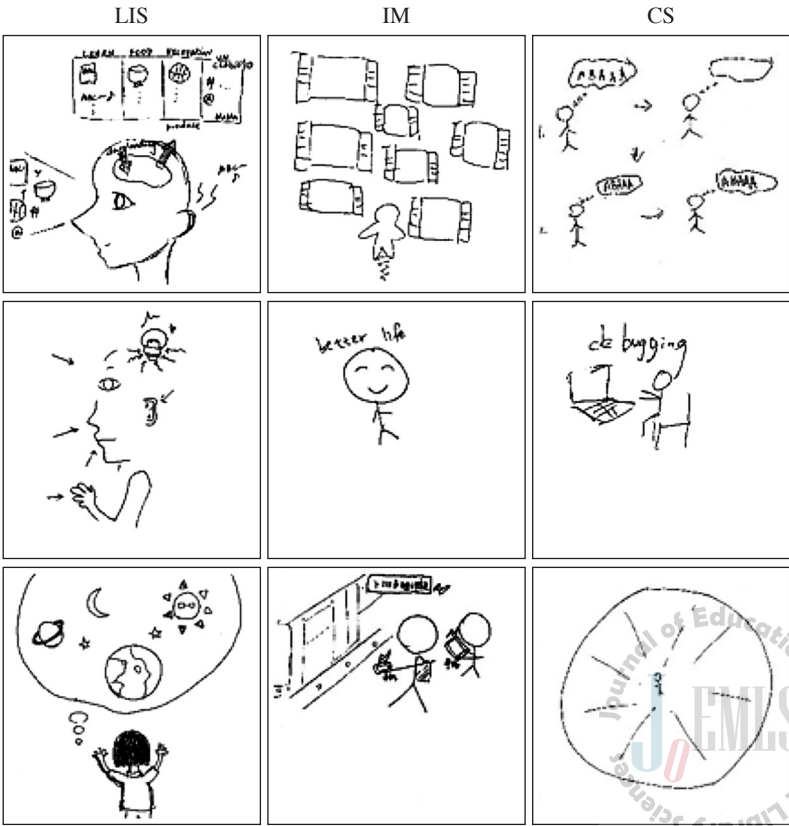
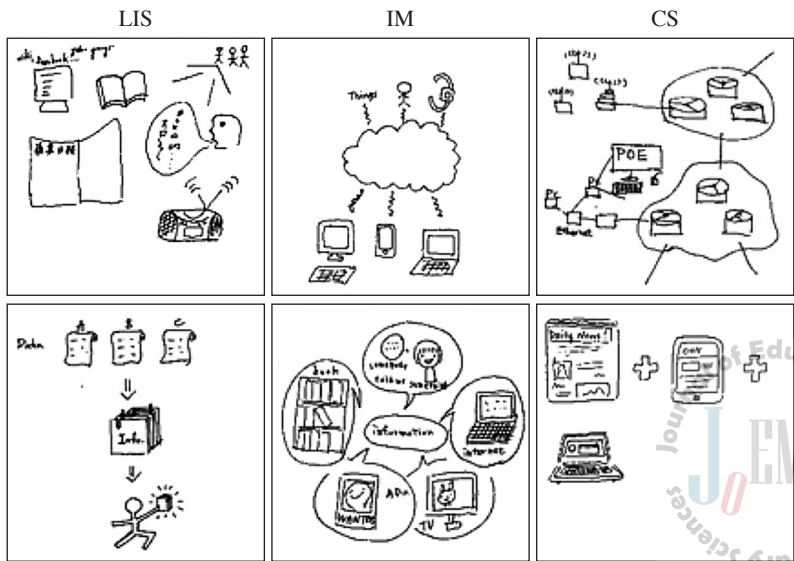


Figure 3 Sample iSquares of ICT and Print Materials by Students in Information-Related Fields

students presented “both human and documents” (four each) or “both human and non-human sources” (four and two each). Most CS students who presented human beings also presented a computer and/or other tools (e.g., Figure 3 CS-2). In general, LIS students included more diverse sources. Even when talking about technology, more LIS students (29.4%) than other students (11.3%) included “both human and technology” in their iSquares.

When investigating the ICT appeared in the iSquares, about 70% of students included computers, laptops, or other mobile devices in their iSquares. However, IM and CS students tended to include mobile devices (non-LIS 35.1% vs. LIS 4.5%), the Internet or websites (non-LIS 32.4% vs. LIS 18.2%), and other electronic equipment such as the server (non-LIS 21.6% vs. LIS 9.1%). LIS students tended to include traditional media such as television and radio (LIS 27.3% vs. non-LIS 16.2%). About one-third of LIS students (33.8%) included print materials such as books, documents or magazines; only a few of non-LIS students did so (IM 12.3%, CS 14.1%). And it is interesting that all non-LIS students who include print materials also include computers, laptops, or mobile devices (Figure 4).

As to the few iSquares included a scene or a setting, most LIS students who included a scene presented the nature such as mountains, lakes, trees, and most CS students presented office settings. Half of the IM students who included a scene presented the nature, and the other half presented office settings. It is interesting that this may somehow reflect the nature of disciplines. LIS students tended to be more towards the humanities and used a metaphor to present the scene. Whereas,



**Figure 4** Sample iSquares of ICT and Print Materials by Students in Information-Related Fields



CS students tended to be more towards the sciences and thus used physical space and equipment to present the “real” scene. And IM students seem to be in between exhibiting both ways of presenting the scene.

Perspectives and Meanings of the iSquares

When using Buckland’s (1991) perspectives on information to discuss iSquares, about a quarter of students (25.1%) presented their iSquares from the perspective of information-as-process (Figure 5); only 10.5% presented from the perspective of information-as-knowledge (Figure 6). While many students used things to express information sources, 42.9% of the students used metaphor to present the iSquares. Since the previous section presented the findings regarding information sources, the following discussion on information-as-thing will focus on how students used “things” to do the metaphor (Figure 7).

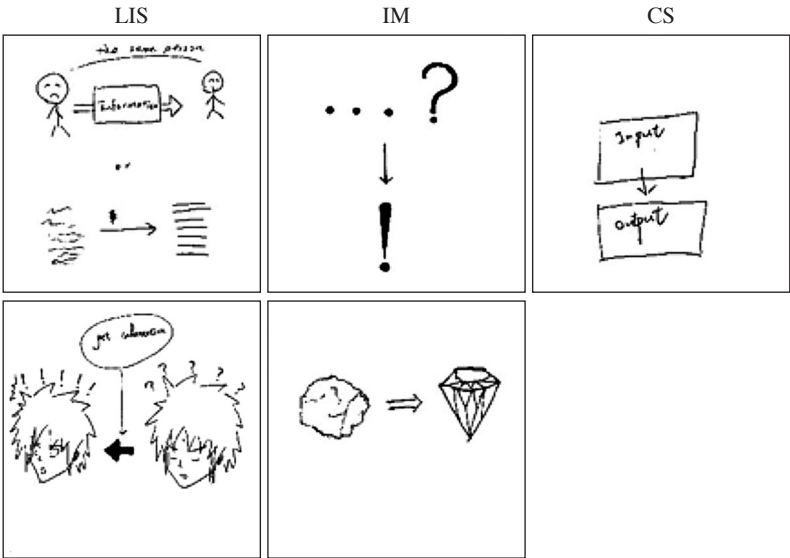


Figure 5 Sample iSquares of Information-as-Process by Students in Information-Related Fields

Note: The iSquares selected in Figure 5 emphasized a specific process from an individual’s perspective (e.g., information seeking) or from a functional perspective (e.g., information transformation).

**Information as process**

About one-third of LIS (33.8%) and IM students (32.9%), as well as 10.3% of CS students, presented the process [ $\chi^2(2, N = 219) = 14.237, p = .001$ ; Figure 5]. Among which, most students (65.5%) describe the concept of information in a linear process, others (21.8%) describe a hybrid or complicated process, and few (14.5%) mentioned a circular process. These iSquares mostly implied information seeking processes or information transformation processes.

We can also find differences across disciplines when further examining the processes with the concept of information seeking. Only LIS students (19.1%) explicitly express information seeking. And while one-third of LIS students mentioned uncertainty (32.4%), only 13.7% of IM students and 6.4% of CS students mentioned this idea ( $\chi^2[2, N = 219] = 18.211, p < .001$ ). Among students who mentioned uncertainty, most of them included question marks or used texts to propose a question (70.3%); a few students used multiple options to present uncertainty (16.2%). And only LIS students (21.7% of those who expressed uncertainty) used a “gap” to present the idea of uncertainty. LIS students expressing uncertainty could come from textbook such as Case and Given (2016) who introduced Brenda Dervin’s sense-making metaphor in the context of information seeking and information use.

Information as knowledge

Within the few students (10.5%) taking about information-as-knowledge, they typically discuss the concept of information with one of the relevant concepts in the data-information-knowledge-wisdom (DIKW) hierarchy (Table 6; Figure 6).

Table 6 iSquares Presented the DIKW Hierarchy

Hierarchy	Number of participants (n = 23)	Percentage (%)
Data—Information	16	69.6
Information—Knowledge/Wisdom	6	26.1
Multiple Levels (D-I-K-W)	1	4.3

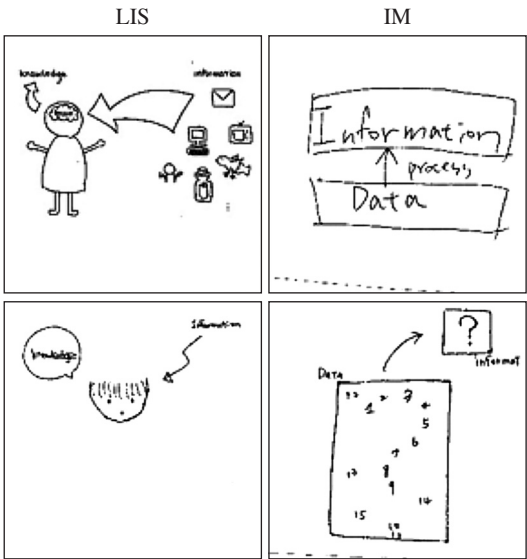


Figure 6 Sample iSquares of Information-as-Knowledge by Students in Information-Related Fields

Note: The iSquares selected in Figure 6 focused on specific concepts in the D-I-K-W hierarchy. However, no CS students presented information-as-knowledge through their iSquare drawings.

Some also implied “information as process” with the emphasis on information transformation. However, students from different field of studies tended to use different ways of presenting information as knowledge ( $\chi^2[2, N = 219] = 7.386, p < .05$ ). While LIS students (17.6%) tended to discuss multiple levels (however mostly shown in texts) or the higher level of how to turn information into knowledge, IM students (11.0%) tended to discuss the lower level regarding turning data into information. Very few CS students (3.8%) mentioned turning data to information only in texts, and thus no iSquare drawings by CS students present information as knowledge explicitly.

Information as thing

In addition to using things (e.g., mobile devices, documents) to present information sources as identified in the previous section, when viewing information as thing, students also used a metaphor to explain the idea of information. While nearly half of the students (49.3%) used metaphors to present the concept of information, students from different field of studies exhibit different in the use of metaphor. Most LIS (57.4%) and IM students (56.2%) used metaphors in their iSquares, but only slightly over one-third of CS students (35.9%) did so ( $\chi^2[2, N = 219] = 8.746, p < .05$ ).

Students used over 30 different things to imply the concept of information (Figure 7), including the image of people (e.g., brains, eyes, hands, ears, hearts), animals (e.g., birds, fish, insects, spiders), plants (e.g., trees, flowers, sprouts), the

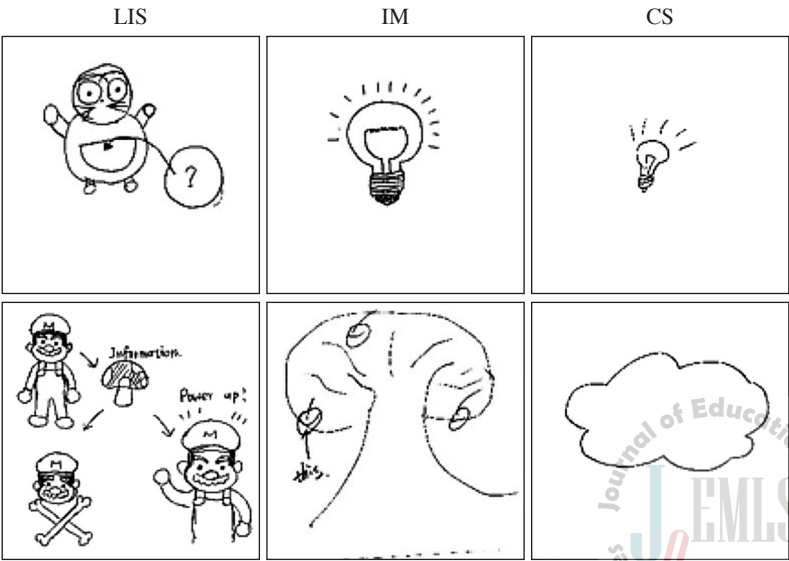


Figure 7 Sample iSquares of Information-as-Thing by Students in Information-Related Fields

Note: iSquares selected in Figure 7 used specific things (e.g., the lightbulb) for the metaphor.

nature (e.g., sun, moon, stars, clouds, the earth/globe, rocks/stones), buildings/roads/bridges, tools and items (e.g., light bulbs, glasses, containers/bottles/cups, musical instruments, transportation, weapons, keys, screwdrivers), money (e.g., coins, banknotes, dollar signs), and food (e.g., cakes, vegetables, fruits). Despite similar metaphors such as clouds (14.9%) and light bulbs (13.8%), only LIS students used bridges (3.0%), and only IM and CS students used money (13.1%), transportation such as airplanes, cars, bikes (13.1%), and weapons such as swords, guns (1.6%). Interestingly, a few LIS students used characters in animation or games to do the metaphor. For instance, one used Doraemon who owns a magic four-dimensional pocket, and one used Mario who can be powered up by the super mushroom. No matter what was used for the metaphor, students typically used positive implications to present their ideas about information.

Although students in the current study used some similar metaphors (e.g., lightbulbs, clouds) with what were presented in Hartel and Savolainen (2016), the LIS students in the current study seemed to use a wider range of “things” to do the metaphor.

Big Data Perspectives

When examining iSquares with the 3Vs concepts of big data—volume, velocity, and variety, 48 students who mentioned one or two big data concepts mainly came from non-LIS fields (70%), including 31.5% of IM students ( $\chi^2[2, N = 219] = 6.776, p < .05$ ). Most of them mentioned the great volume of big data

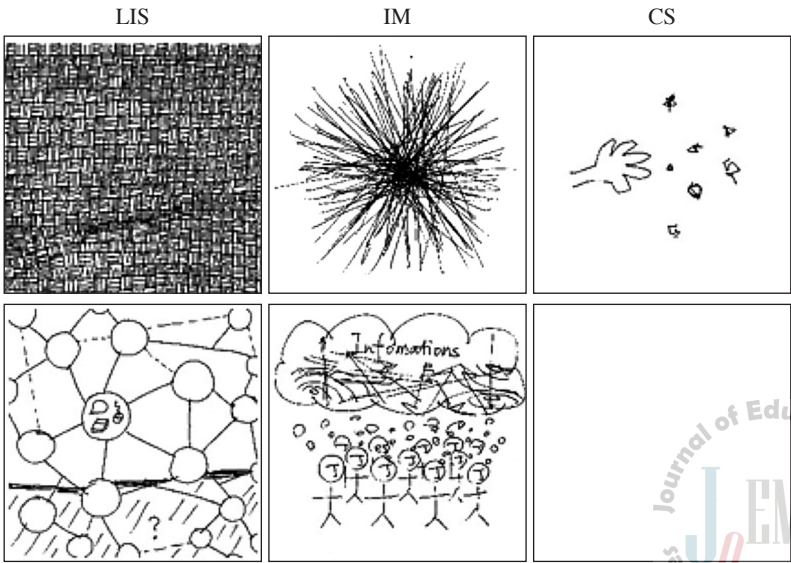


Figure 8 Sample iSquares of Big Data by Students in Information-Related Fields

Note: iSquares selected in Figure 8 highlighted the 3Vs concepts of big data—volume, velocity, and/or variety.

(77%), some mentioned the variety of information (27.1%), only a few mentioned the velocity (16.7%), and only one LIS student mentioned the velocity. See Figure 8.

## Discussion

Although the current study focus on students from different disciplines perceive the concept of information, the researcher also examined the effects from the level of study (undergraduate or graduate levels) in order to draw conclusions. The only differences between undergraduate and graduate students were found in using texts and metaphor, and expressing the ideas of uncertainty. Graduate students tended to use more texts, less metaphor, and express uncertainty. No significant differences were found in all the other elements or perspectives. Therefore, the following discussion focuses simply on how students from different fields of study express the concept of information in their iSquares.

LIS students tended to use link diagram with more complex compositions. Therefore, they use more arrows and lines than other students. And the representation elements included in LIS students' iSquares are also more diverse than other students. For instance, more LIS students than others used speech bubbles and thought bubbles. And resulting from the nature of the field of study as well as the different courses in each program, more IM and CS students than LIS students included binary codes or expressions of programming languages.

The different use of representation elements across disciplines could possibly be explained by the differences in students' compositions. And students' compositions somewhat reflect the nature and approaches of different disciplines. Among the three fields of study, LIS is the one closest to social sciences and humanities, and CS is on the hard-science end. Whereas, IM located in between. LIS students are trained with social science approaches, so they typically tackle issues with contexts; CS students are typically trained to find effective solutions to solve problems. Therefore, when answering a question like "what is information?" LIS students tend to include more elements to provide contexts or disclose different perspectives, and CS students tend to find a simple and elegant way to "answer" it. This phenomenon can not only be seen from their drawings but also from their texts. For instance, LIS students typically use a longer paragraph to describe what they perceive as information and explain their drawings; some CS ( $n = 9$ ) and IM students ( $n = 4$ ) consider information as the binary codes—"information is the combination of 0 and 1/is created through 0 and 1/is typically binary 0 and 1/is constructed by 0's and 1's." Among which, one CS students even stated that "information is nothing more than 0 and 1."

Textbooks reflect the nature of the three information-related fields, and these can probably further explain the differences in the conceptual elements and

perspectives appeared in the iSquares. LIS students tended to include people with a wider range of sources that carry information since various areas in LIS textbooks typically introduce communication theories or information behavior theories that emphasize information channels and different sources of information, and when discussing information services, user-centered design is always one of the major concerns. And what IM and CS students learned is typically based on certain software, hardware, so they may naturally focus on the ICT devices.

Additionally, since many LIS textbooks introduce the DIKW hierarchy when defining information (e.g., Lai, 2001; Wang & Hsieh, 2014), students are more likely to mention multiple levels or emphasized how to turn information into knowledge. Since IM textbooks typically define information as meaningful messages processed from data (Chu, 2017; Laudon & Laudon, 2018), students tended to emphasize the lower level of the DIKW hierarchy. Since CS textbooks tend to introduce data structure, algorithm, etc. without formally defining information (e.g., Cormen et al., 2009; Karumanchi, 2017), students tended to use what they learn and practice—usually things related to coding—to express the concept of information.

Another interesting thing in the same vein is that the use of icons or commercial brands also reflect the different nature of the three fields. On the more humanities end, LIS students used brand characters to do the metaphor; on the social science end, a few LIS students used commercial icons as one of the many media or sources that carry information. Unlike LIS students, some IM and CS students used one single icon that represents an information product or a specific program to express the concept of information. This well presented what information engineering might rely on because things would not function without hardware or infrastructure, and certain information product or program may play an important role.

## **Conclusion**

Despite that the distribution of iSquare image types is somewhat similar among students from different fields, the complexity of elements used to express the concept of information is significantly different. The perspectives of how students express “information” are also quite different. In the field of LIS, students tend to use more complex compositions and metaphor to express “information” and include people or image of people, print documents in their drawings. They also tend to express the concept of uncertainty, information-seeking processes, and the DIKW hierarchy. In contrast, IM students tend to express the concept of big data, and CS students tend to include computers, equipment, and/or concepts related to programming to express “information”.

In general, students in different fields did use different elements and exhibit quite different perspectives on information. The way instructors address the concept of information may affect how students tackle issues regarding information, and thus shape the field in the future. If instructors in information-related fields are open to introduce the concept of information in fuller ranges, it can help students better understand how to position their own field of study among information-related fields. The current study provide insights for instructors to reflect on how they might want to address the concept of information.

As to future research, based on findings of the current study and Hartel (2014b), many students included the image of people in their iSquares and implies the concepts of information behavior. It would be interesting to further investigate how students' perceptions on information affect their own information behavior. This also helps iSquares evolved into a visual elicitation method.

Although Buckland's (1991) perspectives on information served as a solid foundation for the content analysis of iSquares, some of the iSquares in the current study cannot be categorized in one of the three perspectives by Buckland. This implies that iSquares research can help further expand our discussions regarding the concept of information. And while the current study provide a coding scheme for iSquare content analysis, future studies can further develop specific items in the codebook based on the current coding scheme regarding iSquares' composition, representation elements, conceptual elements, and perspectives/meanings. Since participants' drawings vary from context to context, researchers can always start with open coding before finalizing the codebook of the content analysis. Future studies can also conduct longitudinal studies comparing individuals' iSquares in order to capture individual's perspectives on the concept of information in ever-changing information practices.

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# 以視覺方法探討資訊相關領域 學生如何表述「資訊」概念

蔡天怡

## 摘要

本研究運用「資訊方塊」(iSquares)之視覺研究方法，以受試者所產製的圖文，探討來自圖書資訊學、資訊管理學及資訊工程學等系所219位大學生及碩士生所感知的資訊概念。透過內容分析法檢視其圖像元素與意涵，研究發現來自不同系所學生所繪製之資訊方塊類型分布情形有些相似，然其用以表述資訊之元素繁簡程度不一，切入點亦有所不同。圖書資訊領域學生傾向以較複雜的構圖，運用人或人的意象、紙本或印刷品、各種比喻來表述資訊概念，並表達不確定性、資訊尋求的過程與資訊階層等內涵。相形之下，資訊管理領域學生則傾向表達資料處理與巨量資料之概念，而資訊工程領域學生傾向以較簡單的構圖或工具與設備來呈現資訊之概念。本研究據此提出教學相關實務建議與未來研究建議。

**關鍵詞：**視覺方法，資訊科學，大學生，資訊







# A Comparative Analysis of English Abstracts and Summaries of Chinese Research Articles Indexed by the Taiwan Social Science Citation Index: Arts Education, Sports & Exercise, and Management Journals as Examples

Min-Chun Ku

## Abstract

*In addition to English abstracts, several journal publishers in Taiwan provide English summaries (or extended abstracts) along with Chinese research articles. English summary is a unique research genre emerged in response to foreign readers' needs for Taiwanese scholarship. It resolves the problems caused by the inadequacy of English abstracts and the difficulties in translating full research articles into English. This study took the initiative to analyze and compare English abstracts and summaries to understand their structural and compositional differences. English abstracts and summaries provided by three of the six journals indexed by the Taiwan Social Science Citation Index (TSSCI) in 2016 and 2017 were content analyzed. These include: Research in Arts and Education (RAE), Sports & Exercise Research (SER), and NTU Management Review (NTU MR). Disciplinary differences were reflected in the structure and composition of abstracts and summaries. RAE authors wrote unstructured summaries unanimously. SER enforced the structured approach strictly. SER abstracts and summaries exhibited consistent IMRC structure. RAE and SER authors focused on reporting their studies and provided practical suggestions in summaries. NTU MR authors elaborated the contributions their studies made, limitations, and future research directions in summaries. The IMRAD/IMRD structure was decomposed and combined with the sections outlined in the NTU MR guideline.*

**Keywords:** Genre analysis, English abstracts, English summaries, Extended abstracts, Scholarly communication

## Introduction

Some Chinese journals published in Taiwan provide both English abstracts and summaries along with Chinese articles. Different journals take different approaches to instruct authors to write quality summaries. Some take the structured approach, while some give authors freedom in determining what should

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be included and how different components should be structured. Among all the journals indexed by the 2015 and 2017 TSSCI, only six provide both English abstracts and summaries. These include: *Research in Arts Education (RAE)*, *Sports and Exercise Research (SER)*, *NTU Management Review (NTU MR)*, and three journals in the library and information science (LIS) discipline. One of the three LIS journals—*Journal of Educational Media & Library Sciences (JoEMLS)*—pioneered in providing English summaries. English summaries first appeared in *JoEMLS* in Volume 45, Issue 1 in October 2007. Subsequently, other two LIS journals—*Journal of Library and Information Studies (JLIS)* and *Journal of Library and Information Science Research (JLISR)*—started to provide English summaries. English summaries first appeared in *NTU MR* in Volume 23, Issue 2 in June, 2012. *NTU MR* published two issues every year at that time. It started to publish three issues annually since 2013. Seven or eight articles were published in each issue. Research articles, including tables, figures, and Chinese and English abstracts, should be written within 15,000 words. Authors can adjust the length of abstracts according to that of original articles. Authors are required to provide English summaries written within 1,200-1,500 words after receiving close-to-acceptance letters. They also have to translate Chinese citations into English. English summaries should faithfully present the information (data). Authors have to have their summaries edited by professionals to receive acceptance letters. *NTU MR* provides a guideline to instruct authors to write quality English summaries. It suggests that authors write informative summaries. Such summaries should contain the following sections: 1. Purpose/Objective: A concise introduction that states the main purpose of the study; 2. Design/Methodology/Approach: Introduce the design or methods implemented to conduct the study; 3. Findings: Present test results or possible solutions conclusively; 4. Research Limitations/Implications: Identify the limitations that authors have faced and include important suggestions and relevant implications; and 5. Originality/Contribution: State the contributions the study makes and provide insights for future research (*NTU Management Review [NTU MR]*, 2019).

English summaries started to appear in *RAE* in Volume 14, December 1, 2014. *RAE* is a biannual journal that publishes two volumes every year. Four articles that fall into different areas of arts education, including visual arts education, music education, dance education, drama and design, are published in each volume. Chinese abstracts should be written within 350 words, while English abstracts should be written within 250 words. This indicates *RAE* has noticed translation results in the changes in word counts. Authors who submit in Chinese are required to provide English summaries written within 750-1,000 words for the second round of review. Additionally, to prepare for the review



of being indexed by the Social Science Citation Index (SSCI), *RAE* requires authors to translate or transliterate Chinese citations into English (*Research in Arts Education [RAE]*, n.d.). *SER* started to provide English summaries for foreign readers to browse and cite in Volume 18, Issue 1 on March 31, 2016. *SER* also wishes to be indexed by international citation indexes (*Sports & Exercise Research [SER]*, n.d.). It is a quarterly journal that publishes four issues every year. In addition to editorials, it publishes eight articles in each issue. *SER* has relatively rigorous submission requirements. Authors should not cite anecdotic evidence or research output that has not been peer-reviewed, including theses, textbooks, and conference papers. The articles authors cite should be published within 5 years. Authors cannot cite more than 30 articles. Chinese and English abstracts should be written within 500 words. When Chinese submissions are accepted, authors are required to add English citations following the original Chinese citations. They have to submit English summaries written within 800-1,000 words. An example of English summary that contains a table is available on *SER*'s website. An English summary should have the introduction, method, results, and conclusions sections. Tables and/or figures should be concise and translated into English. Authors should only include the bibliographies cited in English summaries in their references. The editorial board invites domain experts to provide revision suggestions. Authors have to revise their summaries to have their articles published (*SER*, 2019).

Journal publishers provide English summaries as part of the preparation for international citation index providers' review. As a unique research genre, English summaries extend the functions of abstracts from guiding foreign readers to select studies of their interests to informing them of how specific studies were carried out and the results. They embody the efforts that journal publishers make to gain international recognition as well as the challenges they face to have their journals indexed by international citation indexes. English summaries facilitate scholarly communication between Taiwan and the rest of the world. However, our understanding of this genre is limited. To date there has no study that investigated the structure and composition of English summaries. It is important to bridge this gap. Thus, this study aimed at uncovering the structure and components of English summaries and comparing them with English abstracts.

This study is part of a larger project that compared English abstracts and summaries provided by TSSCI-indexed journals. The author content analyzed abstracts and summaries of the six journals based on previous studies that analyzed abstracts and different sections of research articles across disciplines. This paper reports the results of analyzing *RAE*, *SER*, and *NTU MR*. The results of analyzing the three LIS journals have been reported in the other article partly

because they share identical disciplinary characteristics with minor differences.<sup>1</sup> In addition to analyzing abstracts and summaries, the author also interviewed members of editorial boards and authors to understand how English abstracts and summaries have been edited and the writing difficulties authors have faced respectively. However, the response rate was extremely low when recruiting editors and authors of *RAE*, *SER*, and *NTU MR*. Only two *NTU MR* authors were interviewed. Members of *NTU MR*'s editorial board did not participate partly because they did not involve in editing English abstracts and summaries. Authors were required to take full responsibilities. An important member of the *SER* editorial board and three professors who have served on the *RAE* editorial boards participated in interviews. The small number of interviewees and their under-representativeness made it difficult to uncover patterns within and across disciplines. Nevertheless, these interviewees provided insight into how English abstracts and summaries were written and processed. Thus, interview results will be used to help interpret the results of content analysis.

What follows is the structure of this article: The author reviews previous studies on abstracts and different sections of research articles to form the analytical framework in the next section. Research on the composition of research articles is reviewed because there is a paucity of literature on English summaries. How English abstracts and summaries were collected and analyzed is then described in detail. The results of analyzing English abstracts in three journals are presented, followed by those of analyzing summaries. Fourth, comparisons between English abstracts and summaries are made. Limitations of this study and future research directions conclude this article.

## Literature Review

Research articles are organized hierarchically. Each article is composed of distinct sections. Each section is composed of moves and each move is composed of steps. A move can be viewed as a communicative act (Lorés, 2004). It is a text segment that performs a specific communicative function. It is also a semantic unit relevant to authors' purposes. It is composed of a bundle of linguistic features, which render a uniform orientation and signal the content of a discourse (Nwogu, 1997; Ruiying & Allison, 2003). A move may be realized by a series of sentences, a sentence, a clause, a phrase, or a word (Pho, 2008). A step or multiple steps help realize the function of moves (Joseph, Lim, & Nor, 2014). Steps are organized in specific sequences. They represent the rhetorical choices that authors make (Ruiying & Allison, 2003). How often a move or step appears in a corpus determines whether it is obligatory, quasi-obligatory, or optional

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<sup>1</sup> Please see Ku (2019) for further reference.

(Joseph et al., 2014). Such frequency tends to be determined arbitrarily by genre researchers. Textual boundaries of moves can be distinguished based on content and linguistic criteria. For example, “play an important role” and “critical” are often used to “claim the centrality of the topic” (Kanoksilapatham, 2005). Some English summaries are composed of sections that are differentiated by headings, while some are not. Regardless of whether there are distinct sections, English abstracts and summaries of Chinese research articles are composed of moves and steps.

## **Abstracts**

### **Definitions and types of abstracts**

The International Standard Organization (ISO, 1976) defined an abstract as “an abbreviated, accurate representation of the contents of a document, without added interpretation or criticism and without distinction as to who wrote the abstract.” The American National Standard Institute defined an abstract as “an abbreviated, accurate representation of a document which should be published with it and which is also useful in secondary publications and services” (American National Standard for writing abstracts, 1977, p. 252). National Information Standards Organization (NISO, 2015, p. 1) defined an abstract as “a brief, objective representation of the contents of a primary document or an oral presentation.” The above definitions emphasize that abstracts should reflect the original documents without distortion. The authorship should not be revealed and value judgements should not be included. ISO (1976) and NISO (2015) advised that abstracts should not be confused with summaries. NISO (2015, p. 2) defined a summary as “a brief restatement within a document (usually at the end) of its salient findings and conclusions intended to complete the orientation of a reader who has studied the preceding text.” This indicates a summary is part of the original document. Unlike an abstract, it cannot be separated from the original document. NISO’s definition deviates from the English summaries this study investigated. The ones this study investigated represent the whole documents and capture their essence. Because almost all the TSSCI-indexed journals that provide English abstracts and summaries use the term summary, including *RAE*, *SER*, *NTU MR*, *JoEMLS*, and *JLISR*, this study used it, despite the definitional differences (Ku, 2019). Only *JLIS* uses the term extended abstract.

Abstracts should provide essential information regarding the studies that have been carried out. They perform several functions. They allow readers to: 1. understand what a document is about quickly. Readers are informed of the topic or main arguments; 2. judge its relevance to their tasks at hand; and 3. decide whether it is necessary to read the entire document (ISO, 1976; NISO, 2015) or whether to pursue detailed information in original articles (Pho, 2008), which

may require translation. Abstracts are searchable in electronic environments. Authors should include terminology that aids in searching (NISO, 2015). Journal publishers tend to require authors to provide abstracts along with original research articles upon submission nowadays. Abstracts also allow readers to access documents written in another language. Many journal publishers in Taiwan require authors who submit in Chinese to provide both Chinese and English abstracts. The problem of abstracts written by non-English native speakers often lies in the lack of authorial voice (Pho, 2008).

### **Types of abstracts**

Abstracts could also be classified based on functions. There are two types of abstracts, including: indicative abstracts and informative abstracts (ISO, 1976; NISO, 2015). Some abstracts contain both informative and indicative elements. Indicative abstracts point out the nature and scope of the research article. Readers can understand the subject and findings, but they are not able to understand how the process was carried out (Lorés, 2004). Indicative abstracts are suited to less-structured or lengthy documents, such as editorials and books. They could also be used to indicate what are included in documents that do not contain methodology and results (ISO, 1976; NISO, 2015). Indicative abstracts should reveal the purpose and scope of the discussion, background information, the approaches that authors adopted, and major arguments. Informative abstracts are suited to documents that contain inquiries, surveys, or experimental studies. They condense original documents and reflect authors' tone and contents (ISO, 1976; NISO, 2015). It is expected that informative abstracts conform the rhetoric structure of research articles, that is, the IMRAD/IMRD (introduction, method, results, and discussion) structure (Lorés, 2004; NISO, 2015). Unfortunately, only 9.40% TSSCI-indexed and 11.37% SSCI-indexed journal abstracts were informative (Chen, 2013).

### **Structure and components of abstracts**

Abstracts could be divided into two types based on the degree of structuration, including unstructured, narrative abstracts and structured abstracts. First, narrative abstracts are written in one or more paragraphs. They are organized in logical sequence and can be read smoothly. However, they have been found to be deficient in that they did not report study design variables and data accurately (Zhang & Liu, 2011). Salager-Meyer (1990) found medical English abstracts suffered from several problems, including: the lack of fundamental moves (e.g., purpose or conclusions) or two or more necessary moves, illogical sequence of move arrangement, and conceptual overlap in paragraph structure. Abstracts in SSCI-indexed journals did not provide sufficient information in one of the IMRD components, except for sociology journals. Some TSSCI-indexed

journals in law and LIS did not contain informative results in their abstracts (Chen, 2013). Second, structured abstracts, which have been introduced from science to social sciences and humanities disciplines, contain distinct headings that differentiate sections (Hartley, 2004; U.S. National Library of Medicine, 2018). The Ad Hoc Working Group for Critical Appraisal of the Medical Literature proposed structured abstracts, which should contain the following sections: objective, design, setting, patients or participants, interventions, measurements and main results, and conclusions. Hartley argued structured abstracts in journals should be written with the following headings: aims, methods, results, and conclusions (Zhang & Liu, 2011). It has been found the quality of structured abstracts was better than that of unstructured abstracts (Hartley, 2004; Taddio et al., 1994). The completeness and clarity of structured abstracts in software engineering were higher than conventional abstracts (Budgen et al., 2008). However, the IMRD structure are not always applicable to certain disciplines. For example, methods were not applicable to certain TSSCI-indexed journals in law and economics and SSCI-indexed journals in law, psychology, economics, and management (Chen, 2013). While structured abstracts are able to provide writing instructions, it is important to develop a cross-disciplinary framework that allows authors to decide which components to include and how they are presented and combined (Lin, Lin, Shaw, Chang, & Chen, 2016).

Both top-down and bottom-up approaches have been taken to unfold the move structure of abstracts. The former refers to distinguishing moves based on content or function. The latter is based on linguistic cues, such as verb tense (Pho, 2008). Pho (2008) took the top-down approach to identify the rhetorical moves of abstracts of empirical research in applied linguistics and educational technology. The framework he used contained the following five moves: situating the research, presenting the research, describing the methodology, summarizing the findings, and discussing the research. The three moves in the middle were obligatory. Pho (2008) also found disciplinary differences in generic structure. The move "discussing the research" was more common in applied linguistics. Liddy (1991) proposed a typical structure of empirical abstracts based on a three-phase study of psychology abstracts. Three types of components comprised the structure, including: prototypical, typical, and elaborated components. Prototypical and typical components include: Relation to other research, purpose: hypothesis, methodology: subjects: sample selection, methodology: procedures: conditions, methodology: data collection, results: discussion, conclusions: implications and references. Cross and Oppenheim (2006) analyzed the move structure of 12 protozoological abstracts. They identified five moves, including: relation to other research, purpose, methodology, summarizing the results, and discussing

the research. Move 5 contained two sub-moves, including conclusions and recommendation. Kelly and Yin (2007) suggested researchers provide informative abstracts. The moves they suggested include: Background and context, purpose/objective/research questions/focus of study, setting, population/participants/subjects, intervention/program/practice, research design, data collection and analysis, findings/results, and conclusions/recommendations. Lorés (2004) found most linguistics abstracts were informative. They contained the following sections and moves: 1. Introduction: Outline the author's purpose, study goals or problems; 2. Methods: Indicate the ways the problems were studied, including the data collected and the methodology; 3. Results: Summarize general findings; and 4. Discussion: Interpret the results, and indicate implications and how findings can be applied. Lin et al. (2016) identified the information elements that should be included in monograph abstracts from humanities scholars' perspectives, including: 1. Problem statement; 2. Target or materials being analyzed (e.g., works, creators, or historical materials); 3. Research methods or theoretical perspectives (e.g., theories drawn on, authors' ways of thinking, or interpretation of texts or materials); 4. Relations with existing research; and 5. New insight, outcomes, or conclusions.

### **Moves and Steps that Comprise Different Sections of Research Articles**

Previous studies have analyzed the composition of research articles in different disciplines and areas of studies. While some analyzed the whole research articles, some focused on specific sections. Nwogu (1997) investigated the structure of prestigious medical research papers. The moves and steps he identified are presented in Table 1 (Nwogu, 1997). To uncover the complete rhetoric structure, Kanoksilapatham (2005) analyzed the IMRD sections of biochemistry research articles published in top five journals in 2000. Table 2 presents the sections, moves, and steps he identified (Kanoksilapatham, 2005). This structure helped the present study develop the coding scheme, so it appears in this and the previous article. Kanoksilapatham (2005) found cyclic patterns in the introduction sections. Moves 1, 2, and 3 recurred as the complexity of a study increased. Both disciplinary and cultural variations affected the structure of the introduction sections.

#### **The introduction section**

Swales' (1990, 2004) analyzed the introduction sections of research articles. The moves and steps he identified are presented in Table 3 (Swales, 1990, 2004).

Swale's results have been adopted and extended. Drawing on Swales' Create-A-Research-Space (CARS) model, Posteguillo (1999) analyzed the organization of research articles in computer science. The IMRD structure was not

Table 1 Rhetoric Structure of Medical Research Articles

Introduction	Methods	Results	Discussion
Move 1: Present background information	Move 4: Describe data-collection procedure	Move 7: Indicate consistent observation	Move 9: Highlight overall research outcome
Step 1: Reference to established knowledge in the field	Step 1: Indicate source of data	Step 1: Highlight overall observation	Move 10: Explain specific research outcomes
Step 2: Reference to main research problems	Step 2: Indicate data size	Step 2: Indicate specific observations	Step 1: State a specific outcome
Move 2: Review related research	Step 3: Indicate criteria for data collection	Step 3: Account for observations made	Step 2: Interpret the outcome
Step 1: Reference to previous research	Move 5: Describe experimental procedures	Move 8: Indicate non-consistent observations	Step 3: Indicate significance of the outcome
Step 2: Reference to limitations of previous research	Step 1: Identification of main research apparatus		Step 4: Contrast present and previous outcomes
Move 3: Present new research	Step 2: Recount experimental process		Step 5: Indicate limitations of outcomes
Step 1: Reference to research purpose	Step 3: Indicate criteria for success		Move 11: State research conclusions
Step 2: Reference to main research procedure	Move 6: Describe data-analysis procedures		Step 1: Indicate research implications
	Step 1: Define terminologies		Step 2: Promote further research
	Step 2: Indicate process of data classification		
	Step 3: Identify analytical instrument/ procedure		
	Step 4: Indicate modification to instrument/ procedure		

Source: Nwogu (1997, p. 133).

applicable and no structural patterns were identified. Nevertheless, three sections, including introduction, results, and discussion/conclusions, appeared frequently. Step 1B of Move 3 and Step 3 of Move 1 appeared the most frequently in the introduction sections. Cyclical patterns were found in Move 2. Samraj (2002) analyzed the introduction sections in wildlife behavior and conservation biology. Wildlife behavior introductions were similar to CARS model, but background moves were included to describe the features of the species under investigation. Gaps in previous research justified the present studies. Conservation biology introductions contained more centrality claims and were strong in persuasion. The lack of biodiversity and species extirpation indicated the importance of the present studies. Such differences could be partly attributed to the applied versus theoretical orientation of the two disciplines and their length. Joseph et al. (2014) also adopted Swales' CARS model to investigate the introduction sections



**Table 2 Rhetoric Structure of Biochemistry Research Articles**

Introduction	Methods	Results	Discussion
<b>Move 1: Announce the importance of the field</b> Step 1: Claim the centrality of the topic Step 2: Make topic generalizations Step 3: Review previous research	<b>Move 4: Describe materials</b> Step 1: List materials Step 2: Detail the source of the materials Step 3: Provide the background of the materials	<b>Move 8: State procedures</b> Step 1: Describe aims and purposes Step 2: State research questions Step 3: Make hypotheses Step 4: List procedures or methodological techniques	<b>Move 12: Contextualize the study</b> Step 1: Describe established knowledge Step 2: Present generalizations, claims, deductions, or research gaps
<b>Move 2: Prepare for the present study</b> Step 1: Indicate a gap Step 2: Raise a question	<b>Move 5: Describe experimental procedures</b> Step 1: Document established procedures Step 2: Detail procedures Step 3: Provide the background of the procedures	<b>Move 9: Justify procedures or methodology</b> Step 1: Cite established knowledge of the procedure Step 2: Refer to previous research	<b>Move 13: Consolidate results</b> Step 1: Restate methodology (purposes, research questions, hypotheses restated, and procedures) Step 2: State selected findings Step 3: Refer to previous literature Step 4: Explain differences in findings Step 5: Make overt claims or generalizations Step 6: Exemplify
<b>Move 3: Introduce the present study</b> Step 1: State purpose(s) Step 2: Describe procedures Step 3: Present findings	<b>Move 6: Detail equipment (optional)</b> <b>Move 7: Describe statistical procedures (optional)</b>	<b>Move 10: State results</b> Step 1: Substantiate results Step 2: Invalidate results <b>Move 11: State comments on the results</b> Step 1: Explain the results Step 2: Make generalizations or interpretations of the results Step 3: Evaluate the current findings Step 4: State limitations Step 5: Summarize	<b>Move 14: State limitations of the study</b> Step 1: Limitations about the findings Step 2: Limitations about the methodology Step 3: Limitations about the claims made <b>Move 15: Suggest further research (optional)</b>

Source: Kanoksilapatham (2005, pp. 290-291) & Ku (2019, p. 47).

of forestry research articles. Forestry introductions were similar to the CARS model. Cyclic patterns of moves occurred, which contributed to the differences in the number of moves. The appearance of Move 1 and Move 3 in all the forestry introductions they investigated made them resemble wildlife behavior and civil engineering introductions. All the moves were obligatory. Two steps were obligatory; two were quasi-obligatory; and five were optional.

Ozturk (2007) explored whether there were sub-disciplinary variations in the introduction sections in second language acquisition and second language writing based on Swales' CARS model. These are subdisciplines of applied linguistics. The length of the introduction sections and whether an area of study was established affected cyclic patterns and the appearance of moves. For example,

**Table 3 Moves and Steps of the Introduction Sections**

Introduction	
Move 1: Establish a territory	Step 1: Claim centrality
	Step 2: Make topic generalizations
	Step 3: Review items of pervious research
Move 2: Establish a niche	Step 1A: Counter-claim
	Step 1B: Indicate a gap
	Step 1C: Raise questions
	Step 1D: Continue a tradition
	Step 2: Present positive justification
Move 3: Present the present work/ Occupy the niche	Step 1: Announce the research purposively or descriptively
	Step 1A: Outline purposes
	Step 1B: Announce the present research
	Step 2: Present hypotheses, questions and assumptions (optional)
	Step 3: Definitional clarifications (optional)
	Step 4: Summarize methods (optional)
	Step 5: Announce principal findings/outcomes
	Step 6: State the value of the present research
	Step 7: Outline the structure of the paper

Source: Swales (1990, pp. 141-142, 2004, p. 230).

as an established field, second language acquisition introductions followed the M1-M2-M3 structure. In contrast, as an emerging field, second language writing introductions contained more “topic generalization” and “literature review”. Two types of structure were found, including M1-M2-M1-M3 and M1-M3.

**The methods section**

Lim (2006) investigated the communicative functions of the methods sections of management research articles. The rhetorical moves and constituent steps he identified are presented in Table 4 (Lim, 2006).

**The results and discussion sections**

Holmes (1997) compared the moves that comprised the discussion sections in three disciplines, including: history, political science, and sociology. The structure he adopted contains the following moves: 1. Background information; 2. Statement of results; 3. (Un)expected outcome; 4. Reference to previous research; 5. Explanation of unsatisfactory result; 6. Generalization; 7. Recommendation; and 8. Outline parallel or subsequent developments. There were no obligatory moves. The discussion sections started with either move 1 or 2. All the moves have closed the sections except for move 1. The most frequently appeared moves were moves 6 and 2. Disciplinary variations were found in the move structure. For example, while sociologists preferred move 2, political scientists preferred move 6. Move 8 only appeared in history. Cyclic patterns were found in political science, but not in history. The results sections of the research articles in computer science that Posteguillo (1999) analyzed include the following moves:

**Table 4 Moves and Steps of the Methods Sections**

Methods	
Move 1: Describe data collection procedure/s	Step 1: Describe the sample
	Step 1A: Describe the location of the sample
	Step 1B: Describe the size of the sample/population
	Step 1C: Describe the characteristics of the sample
	Step 1D: Describe the sampling technique or criterion
	Step 2: Recount steps in data collection
	Step 3: Justify the data collection procedure/s
	Step 3A: Highlight advantages of using the sample
	Step 3B: Show representativity of the sample
Move 2: Delineate procedure/s for measuring variables	Step 1: Present an overview of the design
	Step 2: Explain method/s of measuring variables
	Step 2A: Specify items in questionnaires/databases
	Step 2B: Define variables
	Step 2C: Describe methods of measuring variables
	Step 3: Justify the method/s of measuring variables
	Step 3A: Cite previous research method/s
	Step 3B: Highlight acceptability of the method/s
Move 3: Elucidate data analysis procedure/s	Step 1: Relate (or “recount”) data analysis procedure/s
	Step 2: Justify the data analysis procedure/s
	Step 3: Preview results

Source: Lim (2006, p. 287).

1. Metatextual categories: Pointer and structure of sections; 2. Presentational categories: Procedural, hypothesis restated, and statement of data; 3. Comment categories: Comparison of findings with literature, evaluation, further research suggested, implications, and summarizing. Williams (1999) analyzed the results sections of eight research reports in medicine. The communicative categories comprising his model were similar to Posteguillo’s (1999). Only the steps comprising moves 2 and 3 slightly varied. These include: 2. Presentational categories: Procedural, statement of findings/result, substantiation of finding, and non-validation of finding; and 3. Comment categories: Explanation of findings, comparison of findings with literature, evaluation of findings re hypothesis, and implications of findings. Williams’ (1999) model is adequate for interdisciplinary analysis.

Peacock (2002) compared the discussion sections across seven disciplines, including: physics and material science, biology, environmental science, business (marketing and management), language and linguistics, public and social administration, and law. The structure he adopted contains the following moves: information move (background about theory/research aims/methodology), statement of result (in numerical values or with references to graphs or tables), finding (without references to graphs or tables), (un)expected outcome, reference to previous research, explanation (reasons for unexpected results), claim (a generalization derived from the results), limitation, and recommendation (suggestions for future research). Cyclic patterns include: 1. Introduction:

Moves 1, or 1 + 5, or 2/3; 2. Evaluation: Moves 2/3 and 5, 7 and 5, or 5 and 7; and 3. Conclusion: Moves 3 and 7, or 9. No moves were obligatory. The most frequently appeared moves include: claim, finding, reference to previous research, and recommendation. Information move appeared more frequently in physics and biology. Reference to previous research and cyclic patterns appeared more frequently in language and linguistics. Cyclic patterns also appeared more frequently in law, but less frequently in physics and environmental science.

Ruiying and Allison (2003) studied how research articles in applied linguistics presented their results and drew conclusions. They examined the results, discussion and subsequent sections of 20 research articles. The moves and steps they identified are presented in Table 5 (Ruiying & Allison, 2003). The above sections were inter-related. Cyclic patterns were also identified in these sections. Authors reported their results and commented on their results. Their primary communicative purposes determined the sections and corresponding headings.

**Table 5 Moves and Steps of the Results and Discussion Sections**

Results/Discussion	
Move 1: Preparatory information	
Move 2: Reporting results	
Move 3: Commenting on results	Step 1: Interpreting results
	Step 2: Comparing results with literature
	Step 3: Evaluating results
	Step 4: Accounting for results
Move 4: Summarizing results	
Move 5: Evaluating the study	Step 1: Indicating limitations
	Step 2: Indicating significance/advantage
	Step 3: Evaluating methodology
Move 6: Deductions from the research	Step 1: Making suggestions
	Step 2: Recommending further research
	Step 3: Drawing pedagogic implication
Conclusion	
Move 1: Summarizing the study	
Move 2: Evaluating the study	Step 1: Indicating significance/advantage
	Step 2: Indicating limitations
	Step 3: Evaluating methodology
Move 3: Deductions from the research	Step 1: Recommending further research
	Step 2: Drawing pedagogic implication
Pedagogic implications	
Move 1: Summarizing the study	
Move 2: Dealing with pedagogic issues	Step 1: Indicating necessity for pedagogic change
	Step 2: Drawing pedagogic implications
Move 3: Evaluating the study	Step 1: Indicating limitation
	Step 2: Indicating significance/advantage
Move 4: Deductions from the research	Step 1: Recommending further research

Source: Ruiying and Allison (2003, pp. 374, 376).

Research Methods

Data Collection

To ensure the recency and topic diversity of the corpus, Chinese research articles published in *RAE*, *SER*, and *NTU MR* published in 2016 and 2017 were selected for analysis. Regardless of the types of research, authors are required to provide English summaries for their Chinese articles. Thus, different types of research articles were included. English research articles and editorials were excluded. To facilitate comparisons across disciplines, full texts of Chinese research articles were downloaded from the Airiti Library database. English abstracts and summaries were copied from full texts and pasted on Word files. Dedoose, a cross-platform application for analyzing qualitative data, was adopted to facilitate data analysis. Two separate projects were created—one for analyzing abstracts and the other for summaries. Table 6 illustrates the number of research articles analyzed (Ku, 2019). The number of articles varied in three journals because the number of issues they published each year and the number of articles published in each issue were different. This partly reveals the size of the three disciplines they represent respectively.

Table 6 Journals and Number of Articles Included

Journal titles	<i>N</i> in 2016	<i>N</i> in 2017	Total
<i>RAE</i>	8	8	16
<i>SER</i>	23	25	48
<i>NTU MR</i>	21	23	44
Total	52	56	108

Source: Ku (2019, p. 49).

Table 7 presents the number of abstracts that fall into different categories of word counts. The word counts of *RAE* abstracts range from 138 to 286. Two abstracts had more than 250 words. The average is 194 words. The word counts of *SER* abstracts range from 135 to 378. None exceeded the word limit. The average is 243 words. The word counts of *NTU MR* abstracts range from 70 to 234. *NTU MR* abstracts were shorter than *SER* and *RAE* abstracts. This probably

Table 7 Number of Abstracts with Word Counts

Word counts/Journals	<i>RAE</i>	<i>SER</i>	<i>NTU MR</i>
70-100	0	0	2
101-150	3	2	14
151-200	7	8	26
201-250	4	19	2
251-300	2	12	0
301-350	0	5	0
351-400	0	2	0
Total	16	48	44



could partly be attributed to the former’s requirements. Authors adjusted the length of abstracts according to that of original articles. Short abstracts might have become the disciplinary norm.

Table 8 presents the number of summaries that fall into different categories of word counts. Section headings, tables, and in-text citations were included in word counts. Bibliographical references were excluded. The word counts of *RAE* summaries range from 644 to 1,124. The average is 865 words. Six summaries did not meet the requirements. Three has less than 750 words and three has more than 1,000 words. The word counts of *SER* summaries range from 456 to 1,483. The average is 790 words. The word counts of *NTU MR* summaries range from 564 to 1,725. The average is 1,227 words. Overall, *NTU MR* summaries were longer than *RAE* and *SER* summaries.

**Table 8 Number of Summaries with Word Counts**

Word counts/Journals	<i>RAE</i>	<i>SER</i>	<i>NTU MR</i>
401- 500	0	2	0
501- 600	0	9	1
601- 700	3	9	1
701- 800	3	6	0
801- 900	3	12	1
901- 1,000	4	4	1
1,001- 1,100	1	2	5
1,101- 1,200	2	0	6
1,201- 1,300	0	2	13
1,301- 1,400	0	1	9
1,401- 1,500	0	1	3
1,501- 1,600	0	0	2
1,601- 1,700	0	0	1
1,701- 1,800	0	0	1
Total	16	48	44

**Data Analysis**

Content analysis was implemented to analyze English abstracts and summaries (Neuendorf, 2002). Data analysis involved developing and revising the coding scheme, code, examine, and revise coding decisions iteratively. It was an evolving process in which the coder’s understanding of the corpus increased. The coder must be able to read English without comprehension difficulties. The coder also had to understand previous genre research and the present study to develop the coding scheme. Thus, the author analyzed the corpus by herself. Abstracts were analyzed first, followed by summaries. Abstracts were read several times and compared. The sections, moves, and steps identified by previous studies, which were discussed in the literature review section, were applied and adapted according to the corpus. The internal reliability of the coding was ensured by developing the coding scheme based on a solid foundation of

previous research on abstracts and research articles (Miles, Huberman, & Saldaña, 2014; Savolainen, 2011). Including diverse types of topics and research helped ensure the applicability of the findings (Miles et al., 2014). A coding scheme that detailed definitions of different coding categories with examples was developed based on all the abstracts analyzed. Check-coding refers to repeating the coding process with an independent coder and verifying the coding of selected cases (Regents of the University of Michigan, 2019). It was adopted because it suited lone researcher and this study served as the first attempt to unfold the structure and composition of English summaries (Savolainen, 2011). Additionally, it enhances definitional clarity and reliability (Miles & Huberman, 1994). Thus, after the coding scheme was fully developed, excerpts assigned to different codes were scrutinized. Confusing coding categories, such as “state purpose(s)” and “specify research themes”, were differentiated and excerpts assigned to these codes were re-coded. Interviews also informed data analysis. An *RAE* author who has served on the editorial board contended English summaries should contain theoretical framework, not literature review. Thus, “theoretical framework” was added to the coding scheme. All abstracts were analyzed again to ensure the accuracy of coding decisions. The coding scheme was then used to analyze summaries. Additional coding categories, including: justify methods/participants, restate methodology, summarize the study, and the steps comprising significance, were developed. Definitions of several categories, including describe tasks/treatment/procedures and state time frame, were expanded to encompass variations found in English summaries across disciplines. Original coding decisions made on abstracts were revised based on the changes of the coding scheme. Some excerpts were recoded. Appendix presents the coding scheme (Ku, 2019). There were minor differences in the structural position of the step “state hypotheses” and finer categorization of different types of “significance” in the coding schemes that this article and previous article present (Ku, 2019). The position of “state hypotheses” was relatively unstable. They appeared in different sections in different summaries. *NTU MR* authors tended to enumerate the contributions their studies made in a long paragraph. Thus, different types of contributions were compared to develop the codes. All abstracts and summaries were analyzed at least twice to ensure intra-coder consistency. Excerpts of different coding categories were scrutinized several times and corrected to ensure the accuracy of coding decisions.

Abstracts and summaries were analyzed at corresponding levels of granularity. All the abstracts were coded at the move and step levels because they were unstructured. They did not have distinct sections differentiated by headings. Structured summaries were coded at the section, move, and step levels because they contained all of these. Unstructured summaries were coded at the move and



step levels. Because genre is dynamic, ever-evolving, this study did not aim to produce statistical results generalizable to English abstracts and summaries of the three journals. Descriptive statistics was used for subsequent analysis.

Summaries were also analyzed along four dimensions, including: types of research they reported, whether they were structured, whether they contained tables and/or figures, and whether they contained citations. Table 9 presents the results of this analysis (Ku, 2019). Several dimensions emerged from interviews. Although most interviewees were LIS faculty, these dimensions were applicable across disciplinary boundaries. Additionally, several interviewees served on the editorial boards. They have handled English abstracts and summaries of different types of social science research. For example, when asking the differences between abstracts and summaries, an interviewee responded, “summaries have citations, tables and figures, while abstracts do not.” Thus, visual presentation and citations were applied for data analysis. Formula, especially unnumbered ones, were excluded. Only numbered tables and figures were included in visual presentation.

Table 9 Number and Dimensions of English Summaries

Dimensions/Journal titles		<i>RAE</i>	<i>SER</i>	<i>NTU MR</i>
Research types	Empirical research	12 (75%)	48 (100%)	42 (95.5%)
	Conceptual discussion	4 (25%)	0	2 (4.5%)
Structuration	Structured	0	48 (100%)	34 (77.3%)
	Unstructured	16 (100%)	0	10 (22.7%)
Visual presentation	With tables and/or figures	1 (6.3%)	22 (45.8%)	3 (6.8%)
	Without tables and/or figures	15 (93.8%)	26 (54.2%)	41 (93.2%)
Citations	With citations	5 (31.3%)	48 (100%)	34 (77.3%)
	Without citations	11 (68.8%)	0	10 (22.7%)

Source: Ku (2019, p. 63).

All *SER* summaries reported empirical research. *RAE* had more summaries that reported conceptual discussion than *NTU MR*, although the number of *RAE* articles was lower than that of *NTU MR* articles. There were more qualitative studies and conceptual discussion in *RAE*. These probably demonstrate different journals’ research orientation. According to the three journals’ submission requirements, both *SER* and *NTU MR* take the structured approach, while *RAE* does not. However, *SER* enforced it strictly, while *NTU MR* did not. *RAE* authors wrote unstructured summaries unanimously, despite there was little instruction for authors. Only a *RAE* summary contained figures. *RAE* only sets up word limits for English summaries. No requirements with regard to the content were specified. Writing unstructured, narrative summaries without tables and figures might have become the norm among authors. The percentage of *RAE* summaries that did not contain citations was high, as opposed to *NTU MR*. All *SER*

summaries contained citations. This could be attributed to *SER*’s requirements for English summaries and the example it provides. The percentage of *SER* summaries that contained tables and/or figures was the highest among three journals. This probably could be attributed to the example it provides.

Results and Discussion

Structure and Components of English Abstracts

Table 10 presents the frequency of sections, moves, and steps that comprised the English abstracts and summaries this study analyzed (Ku, 2019). The most frequently appeared moves and steps in abstracts across three journals include: state purpose(s), summarize individual results, describe subjects, describe the data being collected, practical applications, employ data collection methods, claim the centrality of the topic, and propose a new approach/draw on theories. Although frequencies are not equivalent to importance, they still demonstrate the most essential information to report in abstracts were purposes, study results, and target of the study. Most abstracts in three journals contained “state purpose(s)” and “summarize individual results”. These two steps seem to be obligatory.

Table 10 Frequency of Moves and Steps in English Abstracts (A) and Summaries (S)

Sections	Moves	Steps	RAE		SER		NTU MR	
			A	S	A	S	A	S
Introduction	Announce the importance of the field	Describe background	2	4	0	5	2	11
		Claim the centrality of the topic	8	10	5	22	8	18
		Make topic generalization	0	4	1	4	4	8
		Review previous research	2	7	8	53	0	28
	Prepare for the present study	Indicate a gap(s)	3	8	2	27	7	20
		Indicate the problem(s)	2	7	5	24	5	31
	Introduce the present study	State purpose(s)	16	16	48	47	44	45
		Propose a new approach/Draw on theories	6	6	6	16	20	15
		Specify research themes	0	2	2	11	2	8
		List research questions	0	3	0	0	0	3
		State hypotheses	1	0	1	2	6	6
		Clarify definition/coverage/assumption	1	7	0	8	8	16
		Describe expected contributions	0	5	0	4	0	4
		Describe procedure	0	1	0	2	1	8
		Present findings	2	2	0	1	1	6
		Outline the structure of the article	0	3	0	0	2	12
Literature Review	The main body		0	0	0	1	0	12
	Theoretical framework		0	4	0	2	3	9
Methods	Justify methods/participants		0	1	0	1	0	6
	Describe the overall data collection approach		4	7	0	1	5	12
	Describe pretest/pilot study		1	0	0	0	1	1
	Obtain IRB		0	0	0	8	0	0
	Select data collection site		0	1	0	4	1	4
	Describe sampling or exclusion criteria		1	6	4	10	0	13

Describe subjects			6	18	41	51	17	33
Collect data	Employ data collection methods		6	12	18	26	5	19
	Describe the data being collected		5	12	21	39	14	41
	Describe data source		0	0	0	1	2	16
	Describe experiment design		1	1	6	11	0	0
	Assign subjects		0	3	17	21	1	1
	Describe tasks/treatment/procedures		2	4	26	34	1	4
	State time frame		3	11	21	54	8	26
	Develop research instruments		1	11	3	19	0	5
	Employ specific measurement		2	3	4	11	4	5
	Employ data collection equipment		1	3	6	8	0	0
Analyze data	Employ data analysis methods/measurements		1	13	15	44	12	46
	Describe the data being analyzed		0	1	13	3	4	2
	State the purpose of data analysis		2	2	4	11	9	12
	Adopt data analysis software		0	1	2	10	0	5
Verification			0	3	1	5	1	9
Results	Summarize individual results		15	13	49	22	41	22
	Evaluate system performance		0	0	0	0	1	1
	State comments on the results	Explain findings	1	2	1	7	1	3
Discussion	Consolidate results	Restate methodology	0	1	0	0	0	0
		Summarize results	0	9	0	39	1	22
		State selected findings	0	0	0	0	0	3
		Refer to previous literature	0	9	0	11	0	20
		Compare results with literature	1	6	0	9	0	12
	Suggest further research		1	0	0	0	0	2
Conclusions	Make overt claims or generalizations		1	7	41	40	4	12
	Summarize the study		0	3	0	1	0	6
	Significance	Be the first	0	0	1	2	1	7
		Study in a unique context	0	0	0	0	1	3
		Describe what has been accomplished	1	1	0	0	2	30
		Draw on specific perspectives	0	0	0	0	1	6
		Fill a gap(s)	0	0	0	1	0	15
		Relate to/extend previous studies	0	0	0	1	4	13
		Solve the problem	0	0	0	0	0	1
		Implications	4	6	3	7	4	30
	Limitations	Limitations about the scope	1	0	0	1	0	17
		Limitations about the findings	0	1	0	0	0	19
		Limitations about the methodology	0	1	0	1	0	23
	Suggestions	Practical applications	8	15	19	25	9	10
		Future research needs	0	11	1	11	2	54
Indicate content			3	2	0	0	14	3
Other section headings			0	0	0	0	0	66

Source: Ku (2019, pp. 64-66).

The most frequently appeared moves and steps in *RAE* abstracts include: state purpose(s), summarize individual results, practical applications, claim the centrality of the topic, and employ data collection methods. The high frequency of “practical applications” indicates the results of *RAE* studies were exploited to

provide suggestions that help improve practices. *RAE* authors tended to announce the importance of their studies by “claiming the centrality of the topic”. *RAE* abstracts started with “describe background”, “claim the centrality of the topic”, or “state purpose(s)”. Most *RAE* abstracts ended with “practical applications”. Three ended with “indicate content”. Almost all *RAE* abstracts contained “state purpose(s)” and “summarize individual results”. They seem to be obligatory. “Claim the centrality of the topic” and “practical applications” seem to be quasi-obligatory because they appeared in some *RAE* abstracts.

The most frequently appeared moves and steps in *SER* abstracts include: summarize individual results, state purpose(s), describe subjects, make overt claims or generalizations, describe tasks/treatment/procedures, state time frame, and describe the data being collected. These reflect *SER*’s strong focus on empirical research, especially experimental or quantitative studies that involved human or animal subjects. Authors tended to summarize different parts of results and then drew a generalized claim as conclusions. Several *SER* abstracts started with “claim the centrality of the topic”, but most started with “state purpose(s)”. Some ended with “practical applications”. Only one ended with “future research needs”. Some skipped “describe the overall data collection approach” and proceeded to “describe experimental design”. These authors reported the experimental design they implemented without pointing out they adopted the experiment methods first. “The purpose of this study was to determine the effects of *Chlorella* supplementation for four weeks on exercise-induced muscle damage and maximal muscle strength during recovery. In this randomized, double-blind, placebo-controlled study, 24 college badminton players were recruited” could serve as an example. This indicates experiment was a frequently implemented method. The number and types of participants and their demographic data were reported explicitly in consistent forms in *SER* abstracts. Parenthesis was used to report demographic data of participants. “Twenty-four university students, major in physical education (age:  $22.0 \pm 1.7$  yr, height:  $172.7 \pm 4.9$  cm, bodyweight:  $66.9 \pm 7.0$  kg)” could serve as an example. This allows readers to extract and compare results across studies effectively, which could facilitate the development of systematic reviews. Most *SER* abstracts contained the following steps: state purpose(s), describe subjects, summarize individual results, and make overt claims or generalizations. These steps seem to be obligatory. The number of these moves and steps was close to the number of *SER* abstracts analyzed. *SER* abstracts followed a clear IMRC structure. As revealed by an interviewee who has served on the editorial board for a long time, *SER* abstracts and summaries were edited by an Indian. He probably has been trained to identify and include these components in specific forms. Some also contained the following steps: employ

data collection methods, describe tasks/treatment/procedures, state time frame, assign subjects, and practical applications. These seem to be quasi-obligatory. Indicative components did not appear. All *SER* abstracts were informative.

The most frequently appeared moves and steps in *NTU MR* abstracts include: state purpose(s), summarize individual results, propose a new approach/draw on theories, describe subjects, describe the data being collected, and indicate content. The high frequency of “propose a new approach/draw on theories” indicates authors heavily drew on existing theories and models to achieve their purposes. The high frequency of “indicate content” reveals some abstracts were both indicative and informative. These abstracts ended with pointing out what was discussed and/or provided in the end of original research articles. Review articles that analyzed journal articles tended to contain this step. Several *NTU MR* abstracts started with either “claim the centrality of the topic” or “describe background”, but most started with “state purpose(s)”. Some ended with “indicate content”, “practical applications”, or “future research needs”. Most *NTU MR* abstracts contained “state purpose(s)” and “summarize individual results”. They seem to be obligatory. “Propose a new approach/draw on theories”, “describe subjects”, and “describe the data being collected” seem to be quasi-obligatory because they were included in some abstracts.

Several moves and steps tended to co-occur. “State purpose(s)” and “propose a new approach/draw on theories” co-occurred 25 times. Most appeared in *NTU MR*. Several appeared in *SER* and *RAE*. These authors indicated the theories, models, perspectives, or concepts they adopted in their purpose statements. “Describe tasks/treatment/procedures” and “state time frame” co-occurred 17 times. Almost all appeared in *SER*. Only one appeared in *RAE*. It did not appear in *NTU MR*. Temporal aspects of the treatments in experimental studies cannot be separated from the treatments. “Subsequent community-based health promotion program was performed (110 min per day, once per week, for 14 weeks) by exercise intervention group” could serve as an example. “Describe the data being collected” and “state time frame” co-occurred 14 times. These appeared mostly in *NTU MR* and *SER* abstracts. It only appeared in *RAE* abstracts once. *NTU MR* and *RAE* authors pointed out when the data were published or when they collected the data when reporting the data they collected. “The news related to competitive interactions among these companies in 2005 to 2012 are collected” could serve as an example. The above co-occurrences took place in the introduction and methods sections. Adjacent steps were inter-related and they tended to be realized together in a sentence or a series of sentences.

Comparing the frequency of moves and steps comprising *RAE*, *SER*, and *NTU MR* abstracts reveals the following results: 1. “Announce the importance

of the field: Review previous research” appeared more frequently in *SER* than in *RAE* and *NTU MR*. The results of previous studies were described in *SER* to indicate the importance of the phenomena being investigated. 2. “Propose a new approach/Draw on theories” appeared more frequently in *NTU MR* than in *RAE* and *SER*. *NTU MR* studies tended to draw on one or more concepts, perspectives, frameworks, models, and theories. In-text citations appeared several times when this step appeared, although most abstracts did not contain citations.<sup>2</sup> 3. “Clarify definition/coverage/assumption” appeared more frequently in *NTU MR*, while it rarely appeared in *RAE* and *SER*. These include the targeting market, industry, or area of study under investigation, such as the semiconductor industry in Taiwan, Asia markets, healthcare service design, and travel service. 4. “State hypotheses” appeared more frequently in *NTU MR*. These studies involved hypotheses testing. Terms including “hypothesize”, “argue”, “assume”, and “propose” signaled the rhetorical functions of this step.

5. “Describe subjects” appeared more frequently in *SER*. Most *SER* studies reported empirical, quantitative studies that involved human or animal subjects. Subjects in other two journals were embedded in other steps. Readers have to find who the subjects were. “Informal interviews were conducted with the mother” could serve as an example. 6. “Employ data collection methods” appeared more frequently in *SER*, while it rarely appeared in *NTU MR*. The former primarily reported the number of valid questionnaires *SER* authors obtained. This step also includes other methods, such as semi-structured interviews and documentary analysis. An *NTU MR* author stated in the interview that regression analysis was the most common method in the management discipline. Authors only have to report the methods they adopted or the data they used when these were unique. This probably explains why this step rarely appeared in *NTU MR* abstracts. 7. “Describe the data being collected” appeared more frequently in *SER* and *NTU MR*. The former includes: blood samples, muscle biopsy samples, and data collected by specific measurements (e.g., “stature, weight and a battery of fitness”). The latter primarily includes the journals authors collected and analyzed to write their review articles. 8. “Describe experiment design” appeared more frequently in *SER*. These include: cross-over design, counterbalanced and measures design and within-subject design. 9. “Assign subjects”, “describe tasks/treatment/procedures”, and “state time frame” appeared rather frequently in *SER*. Many *SER* abstracts reported experimental studies. 10. “Employ data collection

<sup>2</sup> The abstract text from the article “Behavioral Intention of Earnings Management: The Explanation of Agency Problem, Moral Development and Theory of Planned Behavior” could serve as an example: Based on Ajzen (1985) Theory of Planned Behavior (TPB) and the concept of agency Theory as well as moral development.

equipment” appeared more frequently in *SER*. These include: a mega high-speed camera, the dual energy X-ray absorptiometry, a motion capture system and two force plates, portable heart rate monitor (Polar RS800CX), and so on. These were used to measure and collect data. 11. “Employ data analysis methods/measurements” appeared frequently in *SER* and *NTU MR*, while it rarely appeared in *RAE*. These include: content analysis, discourse analysis, structural equation modeling, and so on. 12. “Describe the data being analyzed” appeared more frequently in *SER*. These include: “the joint moment, joint work and joint power of lower limb” and the elements found in blood samples. 13. “State the purpose of data analysis” appeared more frequently in *NTU MR*.

14. “Summarize individual results” appeared more frequently in *SER* and *NTU MR* than in *RAE*. This roughly reflects the number of abstracts analyzed. 15. “Make overt claims or generalizations” appeared more frequently in *SER*. Most *SER* abstracts contained concluding claims that addressed the purpose(s) of the study. “This study concluded that Tai Chi exercise could improve stability and walking speed of the elderly due to superior energy generation in the hip and knee” could serve as an example. 16. Overall, “significance” appeared more frequently in *NTU MR*. The guideline it provides probably contributed to it. This might also be a disciplinary norm. 17. “Practical applications” appeared more frequently in *SER*. It also appeared frequently in *RAE* given the number of abstracts included in *RAE* was lower. Practical advices were provided based on either the results or concluding claims. “We recommend that aquatic resistance plyometric training could be applied with tapering, which may be beneficial to maintain the specific physical fitness in the longer season” could serve as an example. 18. “Indicate content” appeared more frequently in *NTU MR*, but it did not appear in *SER* abstracts. These tended to point out the concluding contents of the original articles, including theoretical and practical implications and suggestions for future research. *SER* abstracts were informative, while some *NTU MR* and *RAE* abstracts were both informative and indicative.

## **Structure and Components of English Summaries**

### **Sections of English summaries**

Structured summaries were composed of sections, moves, and steps, while unstructured ones were composed of moves and steps. Table 11 presents the frequency of sections that appeared in summaries (Ku, 2019). The number of sections reflects the degree of structuration of the three journals. They exhibited contrasting features. All *RAE* summaries were unstructured, so there were no section headings. Almost all *SER* summaries conformed the IMRC structure, except for one summary. Only one summary did not have the conclusion section. All of the section headings in *SER* summaries were the same. Authors



used conventional IMRC section headings consistently. This indicates that *SER* enforced the structured approach strictly.

**Table 11** Frequency of Section Headings in English Summaries

Journals/Sections	<i>RAE</i>	<i>SER</i>	<i>NTU MR</i>
Introduction	0	48	34
Literature review	0	0	3
Methods	0	48	27
Results	0	48	26
Discussion	0	0	2
Conclusions	0	47	9
Other section headings	0	0	66

Source: Ku (2019, p. 68).

Although *NTU MR* takes the structured approach, it was not enforced strictly. Some authors have consulted the guideline that *NTU MR* provides, some did not. Those who have consulted it interpreted it differently. Most authors directly used the section headings outlined in the guideline (e.g., Design/Methodology/Approach). Only a few authors selected one or two terms from the suggested headings to create their own headings. Some authors combined conventional IMRD headings with the headings outlined in the guideline. “Purpose/objective” was frequently used to denote the “introduction” section. “Purpose”, “objective”, “introduction and study purpose”, “introduction and literature review”, “introduction and contribution” were also used. These indicate the main purpose of this section was to describe the study purpose. These also reflect the literature review sections have been incorporated in the introduction sections. “Design/Methodology/Approach” was frequently used to denote the methods sections. Other headings, including “data and methodology”, “research model”, “samples and study procedure”, “data and findings”, “methodology” and “research methods” were also used. These indicate the importance of describing the data/sample used in these studies. “Findings” was frequently used as a section heading. The term “results” only appeared several times. The discussion section almost disappeared in *NTU MR* summaries. It only stood out as a section by itself once. It was combined with the conclusion section once. Some *NTU MR* summaries ended with the conclusion sections. Many ended with the “research limitations/implications” and “originality/contributions” sections. Limitations, implications, originality, and contributions were decomposed and combined to form sections. One of these stood out as separate sections in some cases, such as “implications” and “research limitations”. Finally, two *NTU MR* authors did not follow the structural sequence outlined in the *NTU MR* guideline. The contribution sections followed the introduction sections. They probably used these to replace the step “describe expected contributions”.

### Moves and steps comprising different sections of English summaries

The most frequently appeared moves and steps in summaries across three journals include: state purpose(s), describe subjects, employ data analysis methods/measurements, describe the data being collected, state time frame, summarize results or summarize individual results, employ data collection methods, and practical applications. These slightly differ from the most frequently appeared moves and steps in abstracts. Sometimes “employ data analysis methods/measurements” were omitted in abstracts, but they were included in summaries. Thus, its frequency increased. Additionally, authors took different approaches to write summaries. Some described individual results in detail, while some just presented the final, overall results. Thus, “summarize results” frequently appeared. The frequency of “propose a new approach/draw on theories” reduced in summaries probably because the theories or models authors adopted were realized in “review previous research” and “theoretical framework”. Most summaries contained the following steps: state purpose(s), describe subjects, data analysis methods, and summarize results. They seem to be obligatory.

The most frequently appeared moves and steps in *RAE* summaries include: describe subjects, state purpose(s), practical applications, summarize individual results, employ data analysis methods/measurements, employ data collection methods, and describe the data being collected. These reflect the importance of human subjects and *RAE* results yielded practical advice. Most *RAE* summaries started with “claim the centrality of the topic”. A few started with “describe background”. Most ended with “future research needs”. Two ended with “indicate content”. Most *RAE* summaries contained the following steps: state purpose(s), describe subjects, summarize individual results or summarize results. These seem to be obligatory. Some contained more moves and steps in the methods sections.

The most frequently appeared moves and steps in *SER* summaries include: state time frame, review previous research, describe subjects, state purpose(s), employ data analysis methods/measurements, make overt claims or generalizations, and describe the data being collected. When the treatments were given and how often the treatments were reported in detail in experimental studies. Citations appeared when authors reviewed previous research. The length of the *SER* introduction sections varied. Some were long, while some were short. Literature review was incorporated in the introduction sections in a few summaries. “Review previous research” was used to point out the importance of the issue, indicate the gaps in previous literature, and serve as the literature review sections. Just like abstracts, *SER* summaries tended to describe subjects in similar forms. Terms including “this study concluded” and “our findings indicate” frequently appeared to signal the step “make overt claims or generalizations”.

Most *SER* summaries started with “claim the centrality of the topic”. Only a few started with “describe background”. Most ended with “practical applications”. Some ended with “future research needs”. Most *SER* summaries contained the following moves: review previous research, state purpose(s), describe subjects, summarize results, and make overt claims or generalizations. These seem to be obligatory. The consistent appearance of these steps probably resulted from the well-trained editor, *SER*’s rigorous requirements, and the example it provides. Many *SER* summaries contained moves and steps in the method and introduction sections, including: employ data analysis methods/measurements, state time frame, employ data collection methods, and describe tasks/treatment/procedures. These seem to be quasi-obligatory. Just like *SER* abstracts, *SER* summaries did not contain indicative components. All were informative.

The most frequently appeared moves and steps in *NTU MR* summaries include: significance, suggestions, limitations, state purpose(s), employ data analysis methods/measurements, describe the data being collected, describe subjects, summarize individual results or summarize results, indicate the problem(s), and review previous research. The frequency of significance, limitations, and suggestions were much higher than those in *RAE* and *SER* summaries. This probably could be attributed to the guideline it provides. *NTU MR* authors wrote long paragraphs to report research limitations/implications and originality/contribution. However, some wrote very short paragraphs for the findings sections. Limitations and future research needs tended to be written in sequence. The former suggested the latter. “First of all, this study focused on manufacturing firms and did not investigate the cognition and relative responses of distributors. Future studies can expand our research by providing two-side view of manufacturer-distributor relationship” could serve as an example. A paragraph tended to contain multiple “limitations and future research needs” cyclical patterns. Most *NTU MR* summaries started with “claim the centrality of the topic”. Some started with “describe background”. Most ended with “future research needs”. Most *NTU MR* summaries contained the following steps: state purpose(s), data analysis methods, summarize results or summarize individual results, and implications. These seem to be obligatory.

Adjacent steps in the methods sections frequently co-occurred. Several adjacent steps in the introduction and results sections also co-occurred. “Describe the data being collected” and “state time frame” co-occurred 42 times in three journals. “Describe tasks/treatment/procedures” and “state time frame” co-occurred 32 times. Most appeared in *SER*. Only a few appeared in *RAE* and *NTU MR*. “Review previous research” and “indicate the problem(s)” co-occurred 29 times. Most appeared in *SER* and *NTU MR* with citations. Only two appeared in

*RAE* without citations. “Refer to previous literature” and “compare results with literature” co-occurred 24 times in three journals. Citations appeared when these co-occurrences took place. “State purpose(s)” and “propose a new approach/draw on theories” co-occurred 20 times in three journals. Most appeared in *NTU MR*. “Describe subjects” and “state time frame” co-occurred 20 times in three journals. “Employ data collection methods” and “describe the data being collected” co-occurred 19 times. These appeared more frequently in *RAE* and *SER*. Only a few appeared in *NTU MR*. “Data analysis methods” and “state the purpose of data analysis” co-occurred 17 times. These only appeared in *SER* and *NTU MR*. “Data analysis methods” and “state the purpose of data analysis” co-occurred 17 times in *SER* and *NTU MR*. “Data analysis methods” and “data analysis software” co-occurred 17 times in *SER* and *NTU MR*. “Assign subjects” and “describe subjects” co-occurred 16 times. Most appeared in *SER*. Four appeared in *RAE*. None appeared in *NTU MR*. “Employ data collection methods” and “describe subjects” co-occurred 16 times in three journals. Most appeared in *SER*. “Review previous research” and “indicate a gap(s)” co-occurred 14 times. Most appeared in *SER*. Three appeared in *NTU MR* and one in *RAE*. “Employ data collection methods” and “describe subjects” co-occurred 14 times in three journals. The above co-occurrences reflect the inseparable relationships between co-occurring steps. Co-occurring steps were realized together in a sentence or a series of sentences. In some cases, co-occurring steps relied on each other to realize their rhetoric functions. For example, previous research was reviewed to indicate the problem(s) authors intended to address in their studies. Sometimes proposing a new approach was the study purposes. Sometimes drawing on specific theories helped achieve study purposes.

Comparing the frequency of moves and steps appeared in summaries in *RAE*, *SER*, and *NTU MR* reveals the following results: 1. Authors of the three journals took two approaches to justify their studies, including “review previous research” and “claim the centrality of the topic”. The former appeared more frequently in *SER* and *NTU MR*. In this way, the introduction sections of *SER* and *NTU MR* summaries were similar to wildlife behavior introductions (Samraj, 2002). In contrasts, “claim the centrality of the topic” appeared more frequently in *RAE* summaries. The approach that *RAE* authors took to justify their studies was similar to conservation biology authors (Samraj, 2002). 2. “Review previous research” appeared the most frequently in *SER*. It also appeared frequently in *NTU MR*. Selected results of previous studies were stated to point out the importance of the present studies. 3. Authors of the three journals indicated the gaps that haven’t been filled out and/or the problems they indented to address to justify their studies. “Indicate a gap(s)” appeared more frequently in *SER*, while

“indicate the problem(s)” appeared more frequently in *NTU MR*. 4. “Propose a new approach/Draw on theories” appeared more frequently in *SER* and *NTU MR*. It seems literature review was incorporated in this step. Citations appeared with the theories and models authors drew on. 5. “Specify research themes” appeared more frequently in *SER* and *NTU MR*. What was covered in the investigation was elaborated. 6. “List research questions” did not appear in *SER*. What was investigated probably was reported by either “stating purpose(s)” or “specifying research themes”. 7. “State hypotheses” appeared more frequently in *NTU MR*. Most appeared in the introduction sections. Only one appeared in the methods section. 8. “Clarify definition/coverage/assumption” appeared in three journals. Citations appeared when some *SER* and *NTU MR* authors defined key concepts or stated the assumptions of their studies. 9. “Describe expected contributions” appeared more frequently in *RAE*. “The results of this study are hoped to contribute to visual arts education in Taiwan and to shed the light on the development of this field as a whole” could serve as an example. 10. “Describe procedure” appeared more frequently in *NTU MR*. How the studies were carried out were briefly described in the introduction sections. “In this paper, a simulation and a survey data analysis are used to demonstrate the performances of these index statistics under multicollinearity” could serve as an example. 11. “Present findings” appeared more frequently in *NTU MR*. An overview of the final results was provided in the introduction sections. “This study suggests that a firm can establish or improve its customer relations management strategy effectively by examining of the determinants of customer profit contribution” could serve as an example. 12. “Outline the structure of the article” appeared more frequently in *NTU MR*, especially in review articles and conceptual discussion.

13. “Literature review: The main body” and “theoretical framework” appeared more frequently in *NTU MR*. It rarely appeared in *SER*. Citations appeared in this move in some summaries. 14. “Justify methods/participants” appeared more frequently in *NTU MR*. These include data collection and analysis methods. 15. “Describe the overall data collection approach” appeared more frequently in *RAE* and *NTU MR*. These primarily include experimental studies and case studies that encompassed multiple data collection methods. 16. “Describe sampling or exclusion criteria” appeared in three journals. These include the sampling strategies that authors adopted (e.g., stratified sampling, cluster sampling, and purposive sampling) and the selection criteria of subjects (e.g., “The exclusive criteria of the subject were including the neuromusculoskeletal injury or previous surgery in lower extremity or trunk”). 17. “Describe subjects” appeared rather frequently in three journals. These include: naturalistic inquiry, case studies, theory-driven and data-driven approaches, ethnographic work,

and so on. 18. “Employ data collection methods” appeared in three journals. It appeared the most frequently in *SER*. These primarily include survey research and other qualitative methods, such as observation and interview. 19. “Describe the data being collected” appeared more frequently in *SER* and *NTU MR*. These two journals accepted more empirical research. Authors spelled out what was collected, including the amount, types, and nature of data. 20. “Describe data source” appeared the most frequently in *NTU MR*. These include the databases where journal articles were obtained and websites and anonymous companies from which data were obtained. 21. “Describe experiment design”, “assign subjects”, and “describe tasks/treatment/procedures” appeared the most frequently in *SER*. These studies adopted experimental methods. These steps rarely appeared in *NTU MR*. 22. “State time frame” appeared the most frequently in *SER* because it was embedded in “describe tasks/treatment/procedures”. It also appeared frequently in *RAE* and *NTU MR*, especially in review articles that reviewed journal articles published in a period of time. 23. “Develop research instruments” appeared more frequently in *RAE* and *SER*. The instruments include: questionnaires, parent-child music activities, movie clips, and art-education-therapy-oriented program. 24. “Employ specific measurement” appeared the most frequently in *SER*. These measurements include different types of scales that participants filled out and indices. 25. “Employ data collection equipment” appeared the most frequently in *SER*. These equipment include: a diagnostic ultrasound system, ultimate frag suit, Polar Sport Tester, Vicon Motion System, and so on. Different types of equipment helped measure and collect data. *NTU MR* authors did not use any equipment, so this step did not appear. 26. “Employ data analysis methods/measurements” appeared frequently in three journals. How data were analyzed were described step by step in some *NTU MR* summaries. 27. “State the purpose of data analysis” appeared more frequently in *SER* and *NTU MR*. What was estimated, calculated, tested, or determined was described. 28. “Adopt data analysis software” appeared the most frequently in *SER*. These include: different versions of SPSS, R software, Expert Choice 2000 software, and Kubios HRV analysis software (version 2.2). 29. “Verification” appeared the most frequently in *NTU MR*. These include: reliability, Delphi method, convergent and discriminant validity, and how bias was avoided.

30. “Explain findings” appeared the most frequently in *SER*. The cause of what was found was explained. “Might be”, “may”, “due to”, and “was related to” were used to describe possible causes. 31. “Summarize results” appeared the most frequently in *SER*. Instead of spelling out findings in detail, some authors chose to present the final results. 32. “Refer to previous literature” and “compare results with literature” appeared in three journals, but the most

frequently in *NTU MR*. Results were compared with what was found in previous studies. Similarities and differences were highlighted. Citations appeared when “referring to previous literature”. 33. “Make overt claims or generalizations” predominantly appeared in *SER*. Most *SER* summaries contained this step. “Our study concludes that aerobic performance of recreational cyclists enhanced by 30-min ischemia preconditioning, which is associated with increased peak oxygen consumption” could serve as an example. 34. Not many summaries contained “summarize the study”. 35. “Significance” appeared predominantly in *NTU MR*, especially “implications”, “describe what has been accomplished”, and “fill a gap(s)”. This could be attributed to the guideline it provides. Different types of contributions that authors have made through their studies were enumerated. “Implications” was the most frequently mentioned significance in three journals. 36. “Limitations” predominantly appeared in *NTU MR*, especially “limitations about the methodology”. This could also be attributed to the guideline it provides. 37. “Practical applications” appeared more frequently in *SER* and *RAE*. Study results of these two journals were exploited to provide suggestions for improving practices. 38. “Future research needs” appeared the most frequently in *NTU MR*. This tended to co-occur with “limitations”. 39. “Indicate content” did not appear in *SER* summaries. “Outline the structure of the article” did not appear in *SER* summaries, neither. These indicate *SER* summaries were informative. In contrast, some *RAE* and *NTU MR* summaries contained both informative and indicative elements.

**Tables and/or figures in English summaries**

This study further analyzed the extent to which English summaries contained tables and/or figures. Table 12 illustrates the number of tables and figures that appeared in different sections (Ku, 2019). Tables and figures were predominantly used to present results. Only one *RAE* summary that reported empirical research contained figures. Figures were used to describe the test the author conducted on participants in the methods section and illustrate the results in the results section. The problem with this summary was that the numbering of figures began with “Figure 12” and ended with “Figure 16”. These figures should be renumbered when being extracted from the original article. *SER* contained the

**Table 12    Number of Tables and Figures  
              in English Summaries**

Journals	Sections	N of tables	Sections	N of figures
RAE			Methods	1
			Results	4
SER	Methods	1	Methods	1
	Results	37	Results	8
NTU MR	Results	6	Results	3

Source: Ku (2019, p. 71).



highest amount of tables and/or figures. This could be attributed to its explicit submission requirement and the example it provides. *SER*'s strong preference for experimental and quantitative studies probably also contributed to it. Statistical results might be better presented by tables and/or figures. The scarcity of tables and figures in *NTU MR* summaries probably could be attributed to the lack of tables and/or figures and instruction in its guideline and submission requirement.

### **Comparisons between English Abstracts and Summaries**

The number of moves and steps appeared in summaries is higher than those appeared in abstracts. "State purpose(s)", "describe subjects", and "summarize individual results" were the most frequently appeared steps in abstracts and summaries across three journals. "Describe the data being collected" and "practical applications" were also among the most frequently steps in abstracts and summaries, although their frequencies varied. Moves and steps that only appeared in summaries include: list research questions, describe expected contributions, literature review: the main body, justify methods/participants, obtain IRB, select data collection site, restate methodology, summarize results, state selected findings, refer to previous literature, and summarize the study. With higher word limits, authors were able to elaborate. Moves and steps comprising the discussion sections were included, although these tended to be written in the results sections. Previous literature was referred in different sections.

Comparing the frequency of moves and steps that comprised abstracts and summaries reveals the following results: 1. "Propose a new approach/draw on theories" and "indicate content" appeared more frequently in *NTU MR* abstracts than in summaries. The use of specific theories or models highlighted the uniqueness of a study. Word limits affected the number of indicative elements in *NTU MR* abstracts and summaries. 2. Frequencies of "develop research instruments", "employ data analysis methods/measurements", "verification", and "future research needs" were much higher in summaries than in abstracts. 3. "Describe the data being analyzed" appeared more frequently in *SER* abstracts than in summaries.

### **Conclusions**

The types of research that three journals accepted, the maturity of the three disciplines, frequently implemented data collection and analysis methods, are reflected in the structure and composition of English abstracts and summaries. With the involvement of the editorial board and strict enforcement of the structured approach, *SER* abstracts and summaries exhibited relative consistent structure and composition. In contrast, the editorial board's focus on Chinese research articles, authors' responsibilities in proving their summaries have

been edited by native English speakers, the interpretations authors made to the guidelines, and disciplinary norms shaped the diverse configuration of *RAE* and *NTU MR* summaries.

Journal publishers may consider whether to have editorial boards edited English abstracts and summaries to enhance the structural and compositional consistency. They will need to consider how authors wish to present their works as well as foreign readers' needs for effective navigation of English abstracts and summaries. Providing a consolidated set of guidelines with a good example of English summary probably could achieve better instructional effectiveness. Editorial boards should provide clear guidance regarding whether and how authors could choose among different options. Authors could adapt to their unique studies. The use of tables and/or figures should be explicitly encouraged. Given that some journals accept studies that adopt relatively diverse research methods and those report conceptual discussion and system development, the types of studies, sections, and conditions that suite indicative components should be clearly specified. This study also suggests editorial boards explicitly state their purposes in providing English summaries, the efforts they have made to have their journals indexed by foreign databases and citation indexes, and what authors could do to contribute. The two *NTU MR* authors interviewed did not think foreign scholars would read *NTU MR*. One even stated it is a fantasy that providing English summaries would help enhance the international visibility of authors' work. She described it as a "wonderful imagination". Several LIS authors have received submission invitations from foreign journals and foreign readers' questions regarding detailed findings of their studies. Testimonies regarding the effectiveness of English summaries in enhancing authors' international visibility need to be discovered and publicized to encourage authors. Authors should also shoulder responsibilities in promoting their work. As suggested by a LIS interviewee, when presenting relevant works in conferences or uploading their works to personal websites, institutional or open repositories such as ResearchGate, authors may indicate "English summary attached".

This study suffered from the following limitations: 1. It only analyzed English abstracts and summaries. Original research articles were not analyzed (Ku, 2019). Therefore, it is unclear how representative and informative English summaries were and the extent to which they differed from original articles. The example that *SER* provides and the guideline that *NTU MR* provides guided authors to write English summaries. Authors might have adapted to the guideline. However, the structure and composition of their research articles might be different. Comparing among abstracts, summaries, and original articles would help develop a holistic understanding of their differences, although there will be

language issues because original articles were written in Chinese. 2. Sometimes a coding decision was made based on how an excerpt was related to other texts within a given summary. As a result, some excerpts were not as typical as others in a given coding category. 3. Different coding categories were treated as mutually exclusive. However, different sections, moves, and steps were inter-related, especially adjacent ones. For example, limitations were divided into three types, including: about the findings, about the methodology, and about the scope (Kanoksilapatham, 2005). As manifested in several *NTU MR* summaries, limitations about the methodology contributed to limitations about the findings. These inter-relationships have challenged data analysis because it was difficult to determine which code should be applied. Moreover, sometimes a move or a step could be viewed as equivalent to others. Authors expressed what was investigated in different ways. For example, “list research questions” and “specify research themes” are convertible.

Future research could be undertaken in the following directions: 1. Compare the citations in English summaries and those in original research articles: This will allow us to understand the extent to which citations have been dropped. It is also crucial to unfold the characteristics of citations that were kept and dropped, and where citations appeared in summaries and their functions. How trustworthy a study is without citations in summaries should be explored from foreign readers’ perspectives (Ku, 2019); 2. Compare the tables and/or figures in English summaries and those in original articles: This will help understand the extent to which tables and/or figures were removed and characteristics of those that were kept; 3. Compare English abstracts and summaries between journals indexed and not indexed by TSSCI (Ku, 2019); 4. Longitudinal studies should be conducted to understand the evolution of English summaries since their commencement (Ku, 2019); and 5. Foreign readers’ perspectives regarding what should be included in English summaries and how different components should be structured should be investigated to inform the development of writing guidelines. It is also important to understand how informative an English summary should be to grant use and citations (Ku, 2019).

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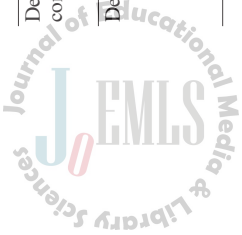
Appendix

The Coding Scheme

Sections	Moves	Steps	Definitions	Shortened excerpts (Abstract/Summary)
Introduction	Announce the importance of the field	Describe background	Provide background or contextual information important to the conduct of the present study	<u>Abstract:</u> Multimedia Music has been recently introduced as an elective within the arts area as part of Taiwan's 12-year basic education.
				<u>Summary:</u> In recent years, the securities authority in Taiwan has been encouraging the firms listed in the Taiwanese Stock Exchange (TWSE) and GreTai Securities Market (GTSM) to purchase directors' and officers' liability insurance (D&O insurance hereafter).
	Claim the centrality of the topic	Describe how widespread or important an issue/problem/phenomenon is	<u>Abstract:</u> Visual arts-related graduate programs have multiplied in Taiwan in recent years.	
			<u>Summary:</u> Also worthy of discussion and comparison is the fact that the varying dimensions of the different types of media platform result in different effects in conveying messages.	
	Make topic generalization	Describe what happens generally	<u>Abstract:</u> The subordinates' attribution of intention about leaders' behavior will affect their emotion and behavior.	
Review previous research	Describe what previous research has done or found	<u>Summary:</u> Human minds are not necessarily rational. A well-designed incentive may influence behavior towards the desired direction.		
Prepare for the present study	Indicate a gap(s)	Describe what previous research has not addressed or state there is a lack of relevant research	<u>Abstract:</u> Based on the capability theorizing, studies have investigated how a following firm can improve its operational performance by learning from a leading firm's best practices.	
			<u>Summary:</u> Many studies have shown that our viewing behavior is affected by stimuli and mental status on a static image.	
			<u>Abstract:</u> But the effects on gait among elderly are still unknown	
Indicate the problem(s)	Point out the practical problems that need to be addressed or solved	Describe what previous research has not addressed or state there is a lack of relevant research	<u>Summary:</u> Little is known about the effect of dynamic characteristics of a video and a viewer's internal status for viewing moving images.	
			<u>Abstract:</u> Aging degrades muscle strength, postural balance and walking stability.	
			<u>Summary:</u> The difficulty in the development of social communication and interaction is regarded as one of the most significant deficits in individuals with autism spectrum disorder (ASD).	
Introduce the present study	State purpose(s)	Point out the overarching goal, aim or purpose of the present study	<u>Abstract:</u> This study analyzed the effect of competitors' activities on the bancassurance strategy from the competitive dynamics perspective.	
			<u>Summary:</u> The objective of this study was to design a novel and effective opinion sentence identification technique.	



Propose a new approach/ Draw on theories	Describe the concepts, models, theories, or perspectives that the present study draws on or develop a new approach to solve specific problems	<b>Abstract:</b> Drawing on the attribution theory of leadership process <b>Summary:</b> This study adopted competitive dynamics
Specify research themes	Detail the aspects of a phenomenon or sub-topics under investigation	<b>Abstract:</b> Four quality improvement programs, including “Improving Infrastructure”, “Enhancing Service Quality”, “Advancing the Profession Interpretation”, and “Strengthening Environmental Management”, were proposed for estimating the economic benefits. <b>Summary:</b> The focus of this paper is on the performances of the relevant statistics from the RWA and the DA, as well as several index of effect sizes, under three effects of multicollinearity (enhancement, suppression, and redundancy) (Friedman and Wall, 2005).
List research questions	Enumerate the research questions that the present study will answer	<b>Abstract:</b> None <b>Summary:</b> Our two research questions follow: 1. What are the major theoretical perspectives and methodological approaches in IT adoption and implementation research developed over the past 15 years?
Clarify definition/ coverage/assumption	Define important concepts, or specify the scope of the present study or article, or describe the assumptions on which the study was based	<b>Abstract:</b> This study focuses on the theme of healthcare service design. <b>Summary:</b> We define “perceived destructive behavior” as any negative action of distributors that is perceived by the manufacturers as damaging the channel functioning performance. <b>Summary:</b> Given that the aesthetic experience may vary with the cultural environment within which an individual is situated and that it is beyond the scope of this research to canvas all the different aesthetics formed in different cultural environments.
State hypotheses/ propositions	Develop the hypotheses that will be tested in the present study	<b>Abstract:</b> We hypothesize that the market gives a premium for firms whose upstream firms disclose favorable news through conference calls, regardless of whether it is financial or nonfinancial information. <b>Summary:</b> The following research hypotheses have been guided this study: 1. There is a statistically groups (PBL vs. LLG) difference exit on creative teaching behaviors and creative thinking abilities for the pre-service PE teachers.
Describe expected contributions	State how the results of the present research may contribute to theories and/or practices	<b>Abstract:</b> None <b>Summary:</b> By doing so, we hope that we can explore and understand the phenomena of athletes’ social stress.
Describe procedure	Provide an overview of how the study was conducted	<b>Abstract:</b> In accordance with the HECM (Home Equity Conversion Mortgage) program, this study decomposes the collateralized property value into six components. <b>Summary:</b> The researcher interviewed the recruited student during internship, taught her artistic skills in the process...



Present findings	Briefly describe the results of the study	Abstract: The research presents how the teacher educator guides the teachers to transform their knowledge through strategies.
		Summary: Seven academic aspects of service experience research are identified with directions for future research: customer/employee emotion, service employee management, service environments...
Outline the structure of the article	Describe how the article or a specific section is organized and point out what is discussed in different sections	Abstract: Initially, we review and summarize the empirical studies of derivatives markets in Taiwan regarding futures market, options market and market mechanism.
		Summary: This paper is organized as follows. A review of M&A is provided in Section 2. Section 3 offers a review of strategic alliances.
Literature Review	The main body	Abstract: None
		Summary: Prior literature investigates the effect of conservatism on attributes of earnings.... Most studies find that conservatism does affect earnings persistence (Chen et al., 2014).
Theoretical framework	Develop and present the theoretical framework along with literature review	Abstract: This study decomposes the above three factors into multi-dimensions in examining accountants' behaviors with regard to earnings management, moral development, and agency problem conditions to provide a comprehensive understanding of the behavioral intentions of earnings management.
		Summary: This study adopts a collective risk model to construct a lifetime cancer insurance pricing model.
Methods	Justify methods/ participants	Abstract: None
		Summary: The use of qualitative methods is appropriate because the transformation of institutional logics is a poorly understood phenomenon in which the causal dynamics are not immediately apparent.
Describe the overall data collection approach	The overall approach/ methodology that the author adopts to data collection and/or analysis, including experiments, case study, grounded theory, quantitative or qualitative approach	Abstract: Using qualitative-based action research procedures
		Summary: We conducted an eye-tracking experiment using an eye-tracker with 500 Hz sampling rate.
Describe pretest/pilot study	Indicate how the pretest or pilot study has been conducted, including participants, instruments, and time frame	Abstract: To develop more suitable research model and questionnaires, in-depth interviews were conducted with nine High Court and District Court officers.
		Summary: To refine the proposed research model and the measurement of research constructs, in-depth interviews were conducted with nine High Court and District Court personnel.
Obtain IRB	The study has been approved by the IRB	Abstract: None
		Summary: This study was approved by the local Institutional Review Board (IRB).

Select data collection site	Indicate the physical setting in which the study took place	Abstract: None Summary: At the main rest areas on this route
Describe sampling or exclusion criteria	Indicate the sampling techniques and/or the conditions/criteria that determined what data were excluded	Abstract: Under stratified sampling and cluster sampling Summary: On further stratifying our sample
Describe subjects	There were two types of subjects, including the target of the study (e.g., projects, organizations, archives, journal articles) and human participants through which the target was investigated	Abstract: Participants in this study were 196 students in elective tennis course ( $M = 165$ , $F = 31$ , Mean age = 19.9) from a university of northern Taiwan. Summary: A large Taiwanese pharmaceutical company
Collect data	Employ data collection methods	Abstract: For the research design, the authors use focus groups to collect data about service encounter failures. Summary: A simulation and a survey data analysis are used
	Describe the data being collected	Abstract: We focus on articles published in TSSCI journals after the year 2000. Summary: We focus on articles published in 16 TSSCI journals after the year 2000, collecting more than 140 papers to conduct the survey
	Describe data source	Abstract: Using data from Taiwan's life insurance companies from 2005 to 2013 Summary: In the CEPS Chinese digital journal database
	Describe experiment design	Abstract: In this randomized, double-blind, placebo-controlled study Summary: In the cross-over study design
	Assign subjects	Abstract: Fifteen Division I male basketball players from Chinese Culture University (CCU) (age: $19.8 \pm 0.9$ yr, height: $186.1 \pm 5.7$ cm, weight: $82.9 \pm 5.7$ kg) were randomly assigned into ARPT and C (control) groups. Summary: Randomly assigned to receive a double-blind design test
	Describe tasks/treatment/procedures	Abstract: Participants in four groups were asked to drink 500 mL of respective beverage for 7 days one hour before the experiment. Summary: Each participant performed 30 free throws under two conditions, the no anxiety intervention (NAI) condition and the anxiety intervention (AI) condition.

State time frame	Describe the temporal aspect of data and/or data collection, including the period during which data were collected and how long participants received treatments	<b>Abstract:</b> After the pre-tests, participants in both training groups performed two 60-min training sessions per week for 8 weeks. <b>Summary:</b> The research period is from 2005 to 2011.
	Develop research instruments	<b>Abstract:</b> All participants completed questionnaires regarding their justice perceptions, trust in coach, collective efficacy, competence and coaching involvement perceptions. <b>Summary:</b> The authors synthesized the gathered information to design ability-appropriated parent-child music activities
	Employ specific measurement	<b>Abstract:</b> It used eye tracking technique and Pleasure-Arousal-Dominance (PAD) emotion measurement scale to analyze browsing movements and aesthetic emotions of 40 participants. <b>Summary:</b> All participants were asked to complete tripartite efficacy scale and sport performance scale
	Employ data collection equipment	<b>Abstract:</b> Portable heart rate monitor (Polar RS800CX) was used to collect the series of heart rate beats throughout the experiment. <b>Summary:</b> A diagnostic ultrasound system was used
Analyze data	Employ data analysis methods/measurements	<b>Abstract:</b> Moreover, this study employs structured content analysis <b>Summary:</b> We conducted hierarchical regression analyses to test our hypotheses
	Describe the data being analyzed	<b>Abstract:</b> The blood samples were assessed for the pH value, carbonate ions, oxygen partial pressure, carbon dioxide partial pressure and excess base value changes. <b>Summary:</b> To analyze browsing movements and aesthetic emotions
Verification	State the purpose of data analysis	<b>Abstract:</b> Employ content analysis to identify critical incidents, and combine the method of sequential critical incident analysis to interpret how the prospects develop their self-recovery mechanisms <b>Summary:</b> To determine the proper number of groups which can represent different types of driver behavior
	Adopt data analysis software	<b>Abstract:</b> The Kwon 3D and DASyLab 6.0 software were applied to analyze the kinematic data, ground reaction force and center of pressure. <b>Summary:</b> By using SPSS statistical software
	Indicate how the quality of the research was ensured or the results were verified	<b>Abstract:</b> Analytic Hierarchy Process is adopted to confirm the relative weight of measurement items for diverse cloud computing service suppliers. <b>Summary:</b> For verification, Delphi method is employed to create a questionnaire repeatedly until the experts reached a consensus..

Results	Summarize individual results	Detail the findings	<p><b>Abstract:</b> Results indicated that 4 weeks detraining significantly improved the relative peak torque of knee extension with angular velocity set at 60° • S-1 and 180° • S-1.</p> <p><b>Summary:</b> The results found are as follows: There are significant differences and similarities between adolescents and adults in terms of their preference judgement factors toward illustration styles; cognitive assessment is the most important factor for preference judgement</p>
	Evaluate system performance	Describe whether the proposed approach/ technique/system outperformed previous ones	<p><b>Abstract:</b> Our empirical evaluation results suggest that the proposed R-OSI technique achieves promising performance.....</p> <p><b>Summary:</b> To evaluate the effectiveness of the proposed R-OSI technique, a data set comprising of 4,500 consumer review sentences regarding digital cameras was collected from Amazon and Google Shopping.....</p>
	State comments on the results	Explain findings	<p><b>Abstract:</b> This phenomenon may be caused from the fact of generational differences in adapting to the visual cultural environment</p> <p><b>Summary:</b> This effect is due to the correlation of cash flows between long-term care insurance and life insurance from the same insured</p>
Discussion	Consolidate results	Summarize results	<p><b>Abstract:</b> None</p> <p><b>Summary:</b> The empirical results show that customer average order scale, total annual order amount, and new product purchase ratio all positively and significantly impact customer profit contribution, which are consistent with the predictions of H1, H2, and H4 respectively. Conversely, customer maintenance cost has a negative impact on customer profit contribution, which supports H3.</p>
		State selected findings	<p><b>Abstract:</b> None</p> <p><b>Summary:</b> 4.3 Reconstructing the Construct Domain Having based our analysis on Robinson and Bennett (1995) framework, we discovered that some constructs of deviant workplace behavior proposed after 1995 were absent from their model.</p>
		Refer to previous literature	<p><b>Abstract:</b> None</p> <p><b>Summary:</b> As Welch and Wilkinson (2005) indicated, perceived conflicts do not constitute improving signals of network cooperative efficiency</p>
		Compare results with literature	<p><b>Abstract:</b> And this echoes previous studies</p> <p><b>Summary:</b> Similar with the findings of previous research on classical or integrated tax systems, this study supports the assertion that tax reforms affect dividend payouts</p>
	Suggest further research	Indicate what requires more investigation	<p><b>Abstract:</b> But still needs to be confirmed in the future studies</p> <p><b>Summary:</b> These analyses still demand a value integration model with humanity at the center to comprehensively explain value exchange and creation</p>

Conclusions	Make overt claims or generalizations	Generalize findings to draw conclusions	<p><b>Abstract:</b> This study concludes that acute oral supplementation of carnitine immediately after exercise can enhance the glycogen recovery in exercised human skeletal muscle.</p> <p><b>Summary:</b> (3) Aesthetic experience enhances sensitivity as a valuable quality in life</p>
	Summarize the study	The conclusion starts with a brief description of the study	<p><b>Abstract:</b> None</p> <p><b>Summary:</b> This study reviewed the literature on external growth strategies, including M&amp;A, joint ventures and strategic alliances. Moreover, we pointed out the characteristics of the Taiwanese sample.....</p>
Significance	Be the first	The study is the first to examine specific phenomena, adopt specific theories, find something, or to make other pioneering achievements.	<p><b>Abstract:</b> This is the first study to demonstrate that 14-week community based health promotion program enhanced the strength and CF in non-frailty elderly and improved DS in pre-frailty elderly.</p> <p><b>Summary:</b> First, we believe we are the first to use the Lerner index as a proxy to examine the impact of concentration and efficiency on market competition in the insurance industry.</p>
	Study in a unique context	The study explores an issue or was conducted in a particular context.	<p><b>Abstract:</b> Our study contributes to entrepreneurship literature by highlighting the importance of managers' stewardship orientation.....in the context of family business.</p> <p><b>Summary:</b> Japan has had a series of mergers and acquisitions in addition to regulatory changes since 1996, which provides the perfect research environment for us to examine the potential factors affecting market competition.</p>
	Describe what has been accomplished	Point out what has been done and/or achieved	<p><b>Abstract:</b> Based on the deduction drawn from sequential critical incident analysis and hermeneutic mode of interpretation, the finding enhances our understanding of self-recovery.....</p> <p><b>Summary:</b> In the theoretical aspect, we show that to estimate the weights of the anchor currencies in the basket, the correct specification is to use the rates of change in exchange rates and to write exchange rates in quantity term.</p>
	Draw on specific perspectives	The study adopts specific theories, models, concepts, and/or perspectives.	<p><b>Abstract:</b> This research has firstly combined related theoretical foundations from different fields into a conceptual framework</p> <p><b>Summary:</b> This study explores factors that contribute to the successful use of judicial information systems in Taiwan's Judicial Yuan from the perspectives of task-technology fit and Social Cognitive Theory.</p>
	Fill a gap(s)	The study bridges the gaps found in previous studies.	<p><b>Abstract:</b> None</p> <p><b>Summary:</b> The results can compensate for the research gap of past studies, which did not directly provide the evidence of claim service quality.</p>
	Relate to/extend previous studies	The study is in some ways related to previous literature (e.g., taking different approaches) or it extends previous studies by adding new things.	<p><b>Abstract:</b> Previous studies on reverse mortgages focused on the analysis of reverse mortgage insurances. This study has instead provided a process that enables lenders to specifically evaluate profit and effectively recognize potential risks.</p> <p><b>Summary:</b> We extend this line of research by proposing that entrepreneurs can recognize opportunities in the constraints lying within incumbents' strengths and dominance.</p>

Solve the problem	The study addresses the problems or provides a solution to a problem.	Abstract: None Summary: The level of service system integration and the assurance of information security are becoming more and more important. The proposed healthcare service planning model addresses these issues by employing the Service Encounter Triad.
Implications	Indicate the areas to which the findings can be applied	Abstract: These results may have profound implications for film theory and art education. Summary: These findings have practical implications for implementing specific teaching and learning methods, as well as understanding characteristics of students' responses.
Limitations	Limitations about the scope	Abstract: None Summary: This study does not consider the potential differential effects of industrial life cycles as well as the macroeconomic environment
	Limitations about the findings	Abstract: However, due to the small sample size of this study, it is difficult to make generalizations. Summary: Our sample was drawn from car salespeople only, and therefore, this limits the generalizability of the results
	Limitations about the methodology	Abstract: None Summary: The experimental scenarios might not fully conform to real-world situations
Suggestions	Practical applications	Abstract: This study suggests that physical education instructors should encourage students with positive interactions..... Summary: The multiple facets of aesthetics can serve as interdisciplinary interfaces to integrate various subject areas.....
	Future research needs	Abstract: These unique characteristics of Taiwanese companies give scholars an opportunity to develop research focused on M&A and alliances. Summary: Future studies can expand our research by providing two-side view of manufacturer-distributor relationship.
Indicate content	Describe the content and/or the structure of the article	Abstract: The review concludes by reflecting on the development of art criticism education and identifying areas that require further research Summary: further considerations and suggestions for practical application are provided

Source: Ku (2019, pp. 51-62).





# 中文研究文章所附英文摘要與摘錄之比較研究：以「臺灣人文及社會科學引文索引」收錄之藝術教育、體育及管理期刊為例

古敏君

## 摘要

除了英文摘要，台灣有些期刊出版商亦提供英文摘錄（或長摘要、延伸摘要）。英文摘錄為獨特的研究文體，因應外國學者對台灣學術之需求而生，彌補了摘要之不足，也解決翻譯全文之困難。本研究比較三種收錄於臺灣人文及社會科學引文索引之期刊之中文研究文章之英文摘要與摘錄，分析其結構與組成元素，包含：《藝術教育研究》、《大專體育學刊》與《臺大管理論叢》。結果顯示最常出現於摘要與摘錄之元素相同，藝術作者一致地撰寫非結構性摘錄，大專體育學刊徹底地執行結構式策略，其結構與元素相當一致。藝術與體育摘錄注重報導其研究，並提供改進實務之建議，管理摘錄解構了IMRD架構，結合期刊所提供指南之架構且重新命名，強調其研究貢獻、限制與未來研究方向。

**關鍵詞：**文體分析，英文摘要，英文摘錄，延伸摘要，學術傳播







# 深度討論應用於ePUB3電子書 翻轉式閱讀理解學習之 課程設計與教學實務

蔡娉婷<sup>a\*</sup> 許慶昇<sup>b</sup> 林至中<sup>c</sup>

## 摘要

近年來，閱讀理解已成為大學的核心通識課程之一，而翻轉式學習即為國內教育界常使用的閱讀理解相關課程教學方法。本文探討如何應用深度討論於ePUB3電子書翻轉式學習模式，並針對運用此新模式的閱讀理解課程進行設計，使課程能運用深度討論法，增加學生分析與綜整的能力，以提升學生的閱讀理解學習成效。本文運用此課程設計於某大學「閱讀教學」課程的「散文選讀」單元，並經由實務教學、準實驗研究法對照分析，以及學生的滿意度調查，驗證此新模式的學生學習成效及滿意度。研究結果顯示，本文所提出的閱讀理解課程設計，透過應用深度討論於ePUB3電子書翻轉式學習模式，可產出優於應用一般討論的學生閱讀理解學習成效，而學生亦相當滿意此種模式的學習。

**關鍵詞：**深度討論，教學實務，課程設計，閱讀理解，翻轉式學習，ePUB3電子書

## 前言

根據國際閱讀素養研究（progress in reading literacy study，簡稱PIRLS）的定義，閱讀素養（reading literacy）是能夠理解並運用書寫語言的能力，從閱讀中學習、統整、建構出意義（柯華葳，2006）。而閱讀素養的教學，是經由多元而豐富的文本閱讀，引發出思考提問與互動討論的教學過程，學生能統整知識，並將知識應用在個人生活以及工作領域，進而培養出「高層次的思辨技巧」與「整合性的思考與溝通」，建立解決問題的態度與能力（品學堂文化股份

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有限公司，無日期)。

近年來，教育部積極鼓勵大學校院強化學生的閱讀理解力，提升學生的重點剖析、整合詮釋、歸納應用能力。因此，閱讀理解課程已成為大學的核心通識課程之一，其目的即藉由閱讀理解，培養可運用於生活、解決生活中對事物的理解及反應力。因此所規劃開設的課程多包含主題與性質不同的多個單元。也由於這些單元性質不同，教材與教法必須活化、創新，方能引起學生的注意與興趣，進而提升其參與學習的意願。

此外，翻轉式學習為國內教育界常使用的閱讀理解相關課程教學方法(許育健，2015；許育健、徐慧玲、林雨蓁，2017；陳欣希等，2012；陳泓諺，2015；葉丙成，2015；雷由禮，2018；鄭圓鈴、許芳菊，2013；薛羽珊，2018)，鼓勵學生於課前自行預讀教材，上課時再針對設定的議題進行討論以完成閱讀理解學習。然而，值得探討的是，雖然國內教育界已有相當多的翻轉式閱讀理解課程教學經驗，但目前的課程多以影片做為教材媒體，以至於課程內容較無法配合需求且透過合適的(多樣化)方式傳遞給學生。由於翻轉式學習鼓勵學生於上課前預讀教材內容、上課時參與議題討論，因此如何使教材內容能透過適當的多樣化方式傳遞給學生，以增加學生閱讀教材內容及參與議題討論的效果，就成為翻轉式閱讀理解課程教學的一個相當重要課題。

有鑒於此，本研究自106學年度第1學期(2017年9月)起，接觸了新發展的ePUB3電子書強大功能技術(International Digital Publishing Forum, 2017)，陸續將所任教的應用中文課程部分教材製作成ePUB3電子書(蔡娉婷，2018a)，並透過ePUB3學習平台(博課師科技有限公司，2018)進行實務教學與研究工作，以驗證應用ePUB3電子書於應用中文課程的教學成效，並得到初步的成果：(一)寫作課程的ePUB3電子書翻轉式學習課程設計與教學實務成果(蔡娉婷、許慶昇、林至中，2019)；(二)ePUB3電子書翻轉式學習模式的課前預讀成效分析(Tsai, Hsu, & Lin, 2019)；以及(三)國文課程的ePUB3電子書混合式學習教案設計及教學實踐成果(蔡娉婷，2018b，2018c)。

基於這些成果，本研究除了已能感受應用ePUB3電子書於應用中文課程的教學成效，但對於應用ePUB3電子書於翻轉式閱讀理解學習課程，則仍發現目前的研究成果尚有些不足之處，原因是：閱讀理解課程主要在於培養學生的閱讀理解力，因此課程中更需透過有效的議題討論，以提升學生的重點剖析、整合詮釋、歸納應用等能力。然而，現有的教學經驗仍反映出一個主要問題，也就是目前的課程議題討論係以一般的小組討論方式進行，由於欠缺有效引導或結構性議題，以至於常發生學生討論時漫無章法，或討論時缺乏邏輯思維，使討論無法得出有效結論，從而降低了討論成效。如此將對於學生文本閱讀理解力的培養，無法獲致有效率且有建設性的收穫。

因此，本研究將延續已有的ePUB3電子書研究成果，針對如何誘使學生在議題討論時能更有成效，應用新興的深度討論法（林奕吾，2017；蕭淑芬，2018；Murphy & Firetto, 2017; Murphy et al., 2018; Quality Talk, 2012; Wilkinson, Soter, & Murphy, 2010）於ePUB3電子書翻轉式學習模式，以提供更加完善的翻轉式閱讀理解學習環境，增進學生參與討論的意願，並透過互動問答及合作解題等做法，強化學生的凝聚力以持續得出有效結論，進而提升學生的閱讀理解能力。

因此，本研究有以下兩個研究問題：

研究問題1：應用深度討論於ePUB3電子書翻轉式閱讀理解的學習成效，是否優於應用一般討論的學習成效？

研究問題2：學生對於應用深度討論於ePUB3電子書翻轉式閱讀理解學習的滿意度為何？

為了驗證上述兩個研究問題，本研究將針對應用深度討論於ePUB3電子書翻轉式閱讀理解學習進行課程設計，使課程能運用深度討論的優點，改善使用一般討論的問題，增加學生閱讀理解能力的學習成效及滿意度。最後，本研究將運用此課程設計於某大學「閱讀教學」課程「散文選讀」單元的實務教學與成效評量，並經由準實驗研究法的實驗組及控制組對照分析，以及學生的滿意度調查，驗證上述的兩個研究問題。

本文將於第二節，針對本研究相關文獻進行探討。第三節將介紹研究方法，說明本研究的研究設計、研究對象、研究工具以及研究流程，其中研究流程為針對應用深度討論於ePUB3電子書翻轉式閱讀理解學習而進行的課程設計工作。接著，在第四節，運用此課程設計於實務教學與成效評量，並透過準實驗研究法的對照分析，驗證本研究的學生學習成效及滿意度。第五節則為結論與未來展望。

## 二、文獻探討

### (一)ePUB3電子書翻轉式學習

一般而言，混合式學習（blended learning; Bonk and Graham, 2006）係指運用不同的學習方法與數位科技，使學習者能透過個人化的方式進行學習。也由於個人化方式學習的成效普遍受到肯定，因此混合式學習已在國外成為備受矚目的學習方法，且有效提升了教與學的效率（Alonso, López, Manrique, & Viñes, 2005; Bersin, 2004; Thorne, 2003）。基本上，翻轉式學習即為混合式學習方法中的一種實施模式，因此也常被稱為翻轉模式（Chen and Chen, 2014; Ram and Sinha, 2017; Wen, Zaid, & Harun, 2016），其主要進行方式為：運用數位科技以翻轉上課時的學生與老師角色，鼓勵學生上課前依自己的時程規劃預讀數位教材

內容，上課時再針對設定的議題進行討論以完成學習。

此外，在翻轉式學習活動的進行過程，數位教材內容可透過不同方式傳遞給學生，例如動態網頁、影片播放等。而ePUB3電子書翻轉式學習即為一種運用新發展的ePUB3電子書技術(International Digital Publishing Forum, 2017)於翻轉式學習活動，使學生能透過功能強大的ePUB3電子書，進行教材閱讀、議題討論、作業練習、成就測驗等活動，以增進學生的學習意願與活動參與，進而提升其學習成效。具體而言，ePUB3電子書以近年來新發展的Web 2.0技術為基礎，透過HTML5、CSS、JavaScript等動態互動與標準規格機制(Mangiardi & Scenini, 2017)，不僅能提供學生更多元的教材內容傳遞以及學習活動進行相關功能，更能透過其強大的教材閱讀或活動參與追蹤功能，為教師提供更有效率的教學與輔導環境。

有鑒於現有翻轉式學習多以網頁或影片做為教材，而學習活動以搭配其他數位學習平台如Moodle<sup>1</sup>、iLearn<sup>2</sup>、Zuvio<sup>3</sup>等加以進行，並無法提供學生整合且便利的教材內容傳遞以及學習活動進行相關功能，亦無法協助教師掌握學生的教材閱讀或活動參與情形，以適時給予協助或輔導。因此ePUB3電子書翻轉式學習模式，已開始被教育界所重視，以期待透過其強大的功能，提供學生與教師更加便利與更有效率的學習與教學環境。例如，洪嘉瑜(2019)運用ePUB3電子書教材於經濟學課程的翻轉式教學，以創新的教材內容及教學方式，提供學生優質的數位學習環境。此外，本研究亦應用ePUB3電子書翻轉式學習於寫作課程的教學(蔡娉婷等，2019)，並經由課程設計與教學實務，以驗證提升學生寫作能力的成效。

## (二) 深度討論法

深度討論法係以知名的探究式問題導向學習(洪振方，2003；Abd-El-Khalick et al., 2004)為基礎，引領學生透過形成問題、建立假設、設計研究、互動問答以及合作解題等過程，以培養學生運用知識與技能以解決問題的能力(Edwards, 1997)。此方法為美國賓州大學研究團隊發展(Quality Talk, 2012)，經由美國各級學校的推動且成效卓著(Murphy & Firetto, 2017; Murphy et al., 2018; Wilkinson et al., 2010)而於近幾年透過國立臺灣師範大學引進並進行研究與推廣(林奕吾，2017；蕭淑芬，2018)，並已獲得初步的成果。例如，徐筱玲、陳浩然、林微庭(2019)應用深度討論法於英文閱讀課程的閱讀理解與批判性思考訓練，其課程設計與教學實務，亦驗證了深度討論對於提升學生高層次思考能力的成效。

<sup>1</sup> <https://moodle.org/>

<sup>2</sup> <https://ilearn.bond.edu.au/>

<sup>3</sup> <http://www.zuvio.com.tw/>



深度討論主要在強調說話與討論是促進思考的重要工具，在討論的過程中，不同的對話會增強不同的認知與思考層次，而要提高學生參與討論的意願，則需要營造出適宜討論的氛圍，因此透過以學生為主體的四項基本要素：自主詮釋與掌控主導、誘發與持續機制、預讀文本與深度分析，以及基本原則與對話氛圍，以增進學生互動討論的意願，並透過相互引導、合作思考，以凝聚學生持續討論的氛圍而得以最後提出有效結論。

### 三、研究方法

#### (一) 研究設計

本研究應用深度討論於ePUB3電子書翻轉式閱讀理解學習課程設計，將以運用現有已獲成效證明的ePUB3電子書翻轉式學習模式為基礎，另外再針對深度討論法的應用加以擴充，使課程能於ePUB3電子書翻轉學習模式中充份運用深度討論的相互引導、合作思考、凝聚氛圍等措施，增進學生深度討論以及解決問題的效果，以提升翻轉學習的整體成效，進而增進學生重點剖析、整合詮釋、歸納應用等能力的培養。

有關實務驗證部分，本研究將選讀一篇琦君女士的散文「放生」。「放生」選自母心似天空（琦君，1993），寫的是琦君偶然在街頭看見巨龜遭人兜售放生，惻隱之心油然而生，可憐這隻大龜蒙受烈日暴曬，但又無力相救，因而回想過去曾在聆聽法師講經時看過的麻雀放生儀式，同樣使人不忍。佛家本應講求慈悲以普渡眾生，但善男信女為了自求福分，竟將自己的幸福建基在無辜的麻雀身上，使得擠在籠中振翅欲飛的鳥兒成了奄奄一息的祭品。這些回憶，使她又聯想到兒時家人前往淨慈寺念經做水陸道場的往事，她和哥哥一同好奇地觀看等待放生的螺絲、甲魚、蛤子等，家中廚子老劉告訴了兩兄妹許多放生的規矩，對話之中還涉及家人之間的人情世故，使人覺得琦君不只在寫放生這件事，更因為放生的觀念而牽引出家人間的微妙關係，及母親溫柔敦厚的待人處世觀（汪淑珍、蔡娉婷，2009）。

琦君女士擅以溫婉筆法娓娓道來，對於人物的描寫，簡單幾句對話即能勾勒人物的性格，除了對母親包容心的描述，二叔婆的自私小器、廚子老劉的篤實和藹、聰明懂事的哥哥，也都躍然紙上，琦君溫婉的性格，使她對筆下的人物寓有無限包容心，寫到鬻龜放生的男子、老邁昏沈的法師、偏私器小的二叔婆，皆不見嚴厲的批判，而以客觀之筆描述，使讀者讀之自有定見。在這篇文章中，除了文學性質的賞析外，可做為議題討論的角度相當多，從宗教角度看，護生、放生、茹素等生命議題，便很值得深究；從環境倫理角度看，放生行為是否得當、法令制定的標準，也值得深思。

本研究係以前後測量不等組準實驗設計為主，並以封閉式問卷調查及開放



式問卷調查為輔，探討應用深度討論於ePUB3電子書翻轉式閱讀理解學習的學生學習成效及滿意度。實驗設計模式如圖1所示，其中自變項為ePUB3電子書翻轉式學習模式下，應用深度討論於閱讀理解學習情形，實驗組採用實驗處理，也就是在ePUB3電子書翻轉式學習模式下應用深度討論於閱讀理解教學，而控制組則是在ePUB3電子書翻轉式學習模式下應用一般討論方法於閱讀理解教學。依變項為閱讀理解學習的學生學習成效課後測驗分數，而共變項則為閱讀理解學習的學生學習成效課前測驗分數。此外，圖1的「O<sub>1</sub>」代表實施課前測驗，「O<sub>2</sub>」代表實施課後測驗，「X」代表進行實驗處理，而「-」則代表未進行實驗處理。

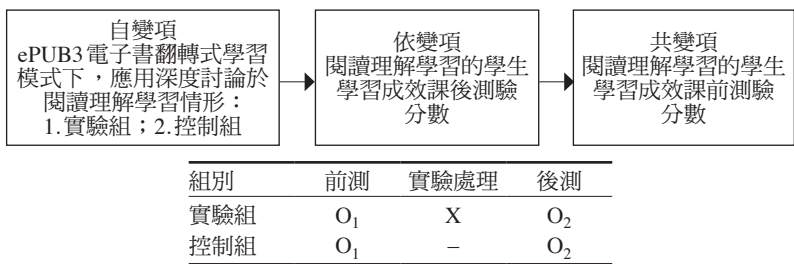


圖1 研究架構圖

(二) 研究對象

本研究採用準實驗研究法，運用實驗組及控制組對照的質性與量化分析、以驗證應用深度討論的學生學習成效，本研究有以下研究對象：

1. 實驗組，為某大學大一學生，49人，年齡為19至21歲之間，該班學生將接受以深度討論為核心的ePUB3電子書翻轉式學習模式。
2. 控制組，為該大學大一另外一班學生，42人，年齡亦為19至21歲之間，該班學生將接受以一般討論為核心的ePUB3電子書翻轉式學習模式。
3. 實驗組與控制組學生入學背景、分數、年齡皆相當接近，且皆未修習過閱讀理解相關課程，因此所具備的閱讀理解先備知識及能力，僅從過去傳統以考試領導教學的國文課得來。此外，兩組學生皆未曾有翻轉學習、深度討論以及ePUB3電子書的課程或使用經驗，僅於高中時期有過上課時進行一般討論的經驗。

(三) 研究工具

1. 閱讀理解应用能力課後測驗

由於後測以驗證學生的閱讀理解应用能力為主，因此我們以一題應用型問答題：「琦君「放生」一文所描述的放生事件，時序和心境上的變化有那些層次？」來命題，並於測驗後以表1的評量尺規做為評量標準，針對閱讀理解的「重點剖析」、「整合詮釋」與「歸納應用」三項能力進行評量。為驗證此評量尺

表1 「放生」單元課後測驗評量尺規

項目	極佳	佳	可	欠佳
重點剖析 (40%)	36-40(完全掌握)	31-35(適當掌握)	26-30(部份掌握)	00-25(欠缺掌握)
整合詮釋 (30%)	26-30(極為精準)	21-25(相當精準)	16-20(尚屬精準)	00-15(欠缺精準)
歸納應用 (30%)	26-30(極為完整)	21-25(相當完整)	16-20(尚屬完整)	00-15(欠缺完整)

規的穩定性，本研究以15位曾修過本課程的學生來進行檢測，並由筆者以及其他兩位曾教授過此課程的教師根據評量尺規進行評分，接著再以肯德爾W檢定 (Kendall’s W Test) 來驗證三位評分者間的信度 (Scorer Reliability)。根據表2的肯德爾W檢定結果可知，在「重點剖析」、「整合詮釋」與「歸納應用」三個項目上，漸進顯著值皆小於 .05；因此，在顯著水準為 .05的情況下，此評量尺規在三位評分者間具有顯著穩定性。

表2 「放生」單元課後測驗評量尺規  
評分者間信度之肯德爾W檢定結果

	內容掌握度	文句流暢度	關鍵詞選定
個數	3	3	3
Kendall’s W 檢定 <sup>a</sup>	.744	.630	.568
卡方	31.237	26.455	23.842
自由度	14	14	14
漸近顯著性	.005	.023	.048

註：<sup>a</sup>Kendall和諧係數

2. 問卷調查

針對學生對於本課程的滿意度調查，本研究於實驗組上課結束後，以問卷調查方式進行。此問卷調查針對ePUB3電子書翻轉式學習以及深度討論的使用，共設計有8道選擇性題目（詳見表3，Q1至Q8），題目分為三類：(1)使用

表3 「放生」單元問卷調查題目

問題性質	問題內容
使用 ePUB3 電子書 翻轉式學習	Q1. 跟傳統的上課方式比較，使用ePUB3電子書翻轉式學習模式上課，是否讓你覺得更有學習效率？
	Q2. 跟傳統的上課方式比較，使用ePUB3電子書翻轉式學習模式上課，是否讓你覺得更以你為核心、提供你更能自己掌控學習的學習環境？
	Q3. 跟傳統的上課方式比較，使用ePUB3電子書翻轉式學習模式上課，是否更能提高你的學習意願？
使用 深度討論	Q4. 跟傳統的討論方式比較，使用深度討論法進行分組討論，是否讓你覺得更能持續進行討論以得出有效結論？
	Q5. 跟傳統的討論方式比較，使用深度討論法進行分組討論，是否讓你覺得更以你為核心、提供你更能自己掌控與主導討論進行的環境？
	Q6. 跟傳統的討論方式比較，使用深度討論法進行分組討論，是否更能提高你參與討論的意願？
整體 滿意度	Q7. 跟傳統的上課方式比較，你是否更滿意使用以深度討論為核心的ePUB3電子書翻轉式學習模式上課？
	Q8. 跟傳統的上課方式比較，你會優先選擇採用以深度討論為核心的ePUB3電子書翻轉式學習模式上課的課程嗎？

ePUB3 電子書翻轉式學習；(2)使用深度討論；(3)整體滿意度。而尺規部分則採用7等級的李克特量表(Likert scale)，其中最低等級為「非常不好」(得0分)、而最高等級為「非常良好」(得6分)。此外，本研究也於問卷調查題目之後，留有文字回饋區域，以鼓勵學生提供學習心得與感想之文字性敘述。

#### (四) 研究流程

由於本研究以應用深度討論於ePUB3電子書翻轉式閱讀理解學習為核心，因此研究流程將以運用ePUB3電子書翻轉式學習模式為基礎，另外再針對深度討論法的應用加以擴充，而有以下四個階段的課程設計工作(此設計以完成應用深度討論於ePUB3電子書翻轉式閱讀理解學習的課程實施為目的，自確認閱讀理解課程的學習目標及教學策略開始，經由學習活動的規劃以及電子書教材的製作，於完成實際的授課與評量後結束)，茲分述如下：

##### 1. 確認閱讀理解學習目標及教學策略

一般而言，教師在設計課程活動及製作教材之前，應先確認此課程的學習目標，並訂定為達成此目標而將採行的教學策略，以設計出適合的學習活動及教材內容。以本研究所探討的閱讀理解課程而言，由於其目的主要為強化學生的閱讀理解力，以提升學生的重點剖析、整合詮釋、歸納應用等能力，因此教師可將培養學生具備此三項能力做為課程的學習目標：(1)重點剖析：找出文章主旨，摘錄重點語句與段落大意；(2)整合詮釋：對文章做整理與重組，以簡潔扼要語句重新表達；(3)歸納應用：具備有效閱讀、創新運用的能力。

根據學習目標，教師接著即可訂定出為達成此目標而將採行的教學策略。具體而言，教學策略可透過以下各項目的綜合運用而加以訂定：教學方法(如直接教導、線上學習、探究討論)、教學方式(如集體、小組、個別方式)，以及教學活動(如教材自學、教材講解、專題製作、問題解決)等項目(潘洪建、劉華、蔡澄，2012；Merrill, 1994)。因此，以閱讀理解課程而言，教師可根據ePUB3電子書翻轉式學習模式，訂定以下教學策略：上課前學生個別線上學習(教材自學)，上課時教師集體教導(教材講解)以及學生小組討論(問題解決)，以透過多元化的翻轉學習活動，達成培養學生閱讀理解力的目標。

##### 2. 規劃閱讀理解學習活動

此規劃可透過以下幾項工作完成：

(1)依據教學策略，決定課程的各個學習活動。由於在ePUB3電子書翻轉式學習模式下，課程進行是以學生為主體，因此教師可依據教學策略所訂定的教學活動，加上必要的測驗評量活動，決定以下課程學習活動：a.上課前學生個別線上預讀教材，以建立閱讀理解概念；b.上課開始時學生個別進行課前測驗(前測)以評量學生閱讀理解概念；c.上課期間教師根據學生閱讀理解概念，進行教材內容集體講解；d.上課期間學生透過閱讀理解議題小組討論，以深化閱

讀思考與訓練；e.上課結束時學生個別進行課後測驗（後測）以驗證學生閱讀理解學習成效。

(2)依據深度討論法的特性，設計上述d小組討論活動內容。一般而言，深度討論法強調運用互動問答及合作解題等做法，以增進學生的參與討論意願，強化其凝聚共識以得出有效結論的能力。因此，教師可依據深度討論法強調的做法，加上必要的分享評量活動，設計以下的小組深度討論活動內容：a.討論前教師解說討論過程，並要求學生進行提問練習，以透過深度討論法強調的提出問題（如文本探究、情境假設、經驗分享、新知探討等問題）、回應問題（如提出支持性／延伸性／批判性回應）、提問與回應循環等措施，增強學生的認知與思考練習，提高學生後續參與議題討論的能力與意願；b.討論開始時學生針對教師提供的討論題目進行組內深度討論（包含前述的各式問題提出、支持性／延伸性／批判性回應、提問與回應循環等活動）；c.討論期間學生根據提問與回應循環活動成果，進行結論推論、驗證、提出等活動；由於學生已擁有認知與思考的經驗，加上深度討論鼓勵的分享想法、假設探討、提供佐證、挑戰論點等做法，因此可協助學生凝聚持續討論的氛圍而得以最後提出有效結論；d.討論結束時學生進行跨組結論分享、相互評論等活動，教師並給予評語及建議，以提供學生自我評量與省思的參考。

(3)依據前述學習活動的規劃，考量各活動進行所需要的教材、時間、資源（如特殊設備、教學助理等），將學習活動詳細規劃完成（共設計有六個學習活動，如表4所示）。

表4 課程學習活動

翻轉式混合學習活動	活動內容	活動期限	活動時間
A.1 預讀教材	學生個別線上預讀教材	上課前	7天
A.2 課前測驗	學生個別課前測驗	上課開始時	5分鐘
A.3 講解教材	教師集體講解教材內容 學生個別線上閱讀教材	上課期間	10分鐘
A.4 小組討論	學生小組提問練習 學生小組深度討論	上課期間	20分鐘 30分鐘
A.5 分享互評	全班公開分享及互評 教師評語及建議	討論結束後	30分鐘
A.6 課後測驗	學生個別課後測驗	上課結束時	15分鐘

- A.1 預讀教材：上課前7天內，學生個別線上預讀ePUB3電子書教材，以建立閱讀理解概念。
- A.2 課前測驗：上課開始時，學生於ePUB3電子書測驗本個別進行5分鐘課前測驗（前測），以評量學生閱讀理解概念。
- A.3 講解教材：上課期間，教師根據前測結果顯示的學生閱讀理解概念，進行10分鐘教材內容集體講解，學生並於線上個別閱讀ePUB3電子書教

材，以強化學生的閱讀理解概念。

- A.4 小組討論：上課期間，學生根據教師指定分組及討論題目，進行50分鐘小組深度討論，以深化閱讀思考與理解訓練。此討論包含以下活動內容：  
a. 教師解說討論過程，並要求學生進行提問練習，以增強學生的認知與思考練習；  
b. 學生針對教師提供的討論題目，循環進行組內問題提問與回應；  
c. 學生根據提問與回應循環活動成果，推論、驗證、提出結論。
- A.5 分享互評：討論結束後，學生進行30分鐘跨組結論分享、相互評論成果，教師並給予評語及建議，以提供學生自我評量與省思的參考。
- A.6 課後測驗：上課結束時，學生於ePUB3電子書測驗本個別進行15分鐘課後測驗（後測），以驗證閱讀理解的學習成效。

### 3. 設計製作閱讀理解電子書內容

由於在ePUB3電子書翻轉式學習模式下，ePUB3電子書用於課程的線上預讀(A.1)、課前測驗(A.2)、集體講解(A.3)、課後測驗(A.6)等活動，因此電子書的設計將以配合這些學習活動的進行為核心，使電子書內容能於學習活動進行中，透過適當的ePUB3電子書功能傳遞給學生，以協助其完成學習活動。例如，為配合學生線上預讀(A.1)的需要、建立學生的閱讀理解概念，ePUB3電子書教材需適當的將重點剖析、整合詮釋、歸納應用等相關內容按順序編排，並透過實例解說以達到學生自行預讀即可建立閱讀理解概念的目標。

在完成上述ePUB3電子書教材內容設計後，接著即可進行此電子書內容的傳遞功能設計。由於ePUB3電子書技術提供非常豐富的内容傳遞功能，例如影片動畫、參考連結、語音導讀、自動輪播等，因此教師可運用這些功能以提供吸引學生閱讀、增進內容了解、配合學習活動的電子書教材。

最後，在完成ePUB3電子書的教材內容以及傳遞功能設計後，即可透過適當的開發工具將此電子書製作完成。目前有關ePUB3電子書製作，已有許多可行的開發工具，例如ViewPorter<sup>4</sup>、InDesign<sup>5</sup>、Sigil<sup>6</sup>、Calibre<sup>7</sup>等，其中以Viewporter最為通行，製作出的電子書品質也相當受好評。圖2及圖3為本研究運用Viewporter而製作完成的「放生」ePUB3電子書教材部分內容。

<sup>4</sup> <http://viewporter.com>

<sup>5</sup> <http://www.adobe.com/in/products/indesign.html>

<sup>6</sup> <https://github.com/Sigil-Ebook/Sigil>

<sup>7</sup> <http://calibre-ebook.com/>



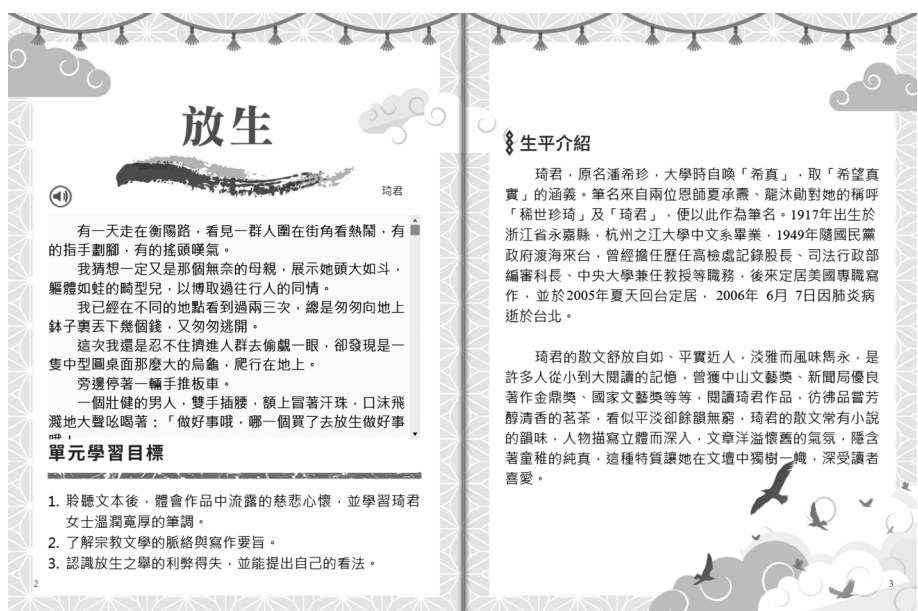


圖2 「放生」ePUB3電子書教材示例(一)：學習目標、文本內容、語音導讀

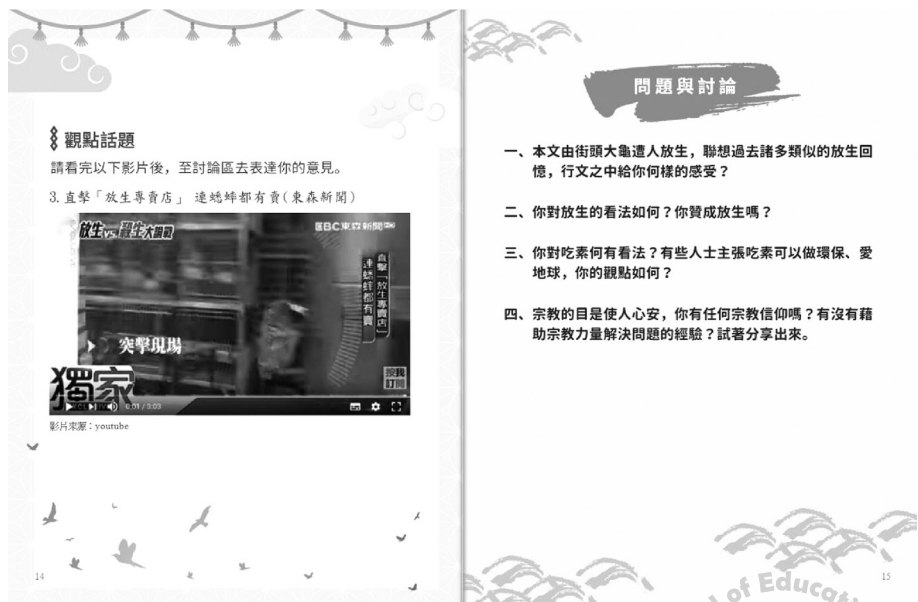


圖3 「放生」ePUB3電子書教材示例(二)：影片播放、觀點話題、問題討論

#### 4. 閱讀理解課程授課與評量

在完成ePUB3電子書教材的製作後，接著即可進行此閱讀理解課程的實務教學與成效評量。此階段工作可於排定的課程日期，依據前述規劃好的學習活動(如學習活動A.1至A.6)，透過ePUB3電子書教材的配合使用，於時間內完成各活動所規範的學習工作。至於課程的成效評量部分，則基於驗證本研究所

提出的兩個研究問題，將首先透過準實驗研究法的實驗組及控制組對照分析，以驗證應用深度討論於ePUB3電子書翻轉式閱讀理解學習的學生學習成效（研究問題1），接著透過實驗組學生的滿意度問卷調查，以了解學生對課程的滿意度（研究問題2）。

## 四、翻轉式閱讀理解學習課程實務教學與成效評量

在提出應用深度討論於ePUB3電子書翻轉式閱讀理解學習的課程設計後，本研究接下來即運用此課程設計於某大學「閱讀教學」課程「散文選讀」「放生」單元的實際教學與評量。本節先於第一小節說明「放生」單元的學習活動及教材內容，第二小節與第三小節則分別介紹此單元的實務教學與成效評量，最後於第四小節針對研究結果進行討論。

### （一）「放生」單元學習活動及教材內容

依據前述課程設計第二階段所規劃的學習活動（如表4所示），本單元設計有六個學習活動，而ePUB3電子書教材的設計及製作，亦以配合各個學習活動的進行為核心，使教材內容能於活動進行時，透過適當方式傳遞給學生。例如，如圖1及圖2所示，為了配合學生預讀教材（A.1）的需要，教材的設計即以運用影片播放、語音導讀等生動方式，以增加學生的閱讀興趣。此外，教材中也加入觀點話題及問題討論等內容，以引導學生的閱讀思考與理解訓練，使學生能透過自行預讀即可建立閱讀理解概念。

### （二）「放生」單元課程實務教學

在進行課程實務教學前，本研究首先針對成效評量部分，設計以下兩項評量工作：1. 準實驗研究法的實驗組及控制組對照分析，驗證應用深度討論於ePUB3電子書翻轉式閱讀理解學習的學生學習成效，2. 藉問卷調查了解實驗組學生對課程的滿意度。本研究以前述的研究對象為基礎，於107學年度第1學期（2018年）11月13日上午進行採用深度討論的實驗組實務教學，於11月16日下午進行採用一般討論的控制組實務教學，以表5做為此實驗組及控制組實務教學的學習活動規劃，以表6做為學習活動的小組討論進行規劃。程序上，於上課前一週，對實驗組班級介紹以深度討論為核心的ePUB3電子書翻轉式學習模式（A.1至A.6學習活動）、深度討論進行方式（如表6），並說明第二週上課前7天內，需完成A.1學習活動。兩班於正式上課開始時均進行表5之A.2-A.6學習活動。為提高分組討論效果，本研究採隨機分組方式、每組4至5位學生，進行深度討論，於討論結束後進行全班分享及相互評論，並由教師講評及建議。最後，於上課結束時進行課後測驗，驗證學習成效。



表5 實驗組及控制組實務教學學習活動規劃

學習活動名稱	實驗組	控制組
A.1 預讀教材	ePUB3 電子書教材	ePUB3 電子書教材
A.2 課前測驗(兩組相同問題)	接受	接受
A.3 講解教材	接受	接受
A.4 小組討論	深度討論	一般討論
A.5 分享互評	接受	接受
A.6 課後測驗(兩組相同問題)	接受	接受

表6 實驗組及控制組實務教學小組討論規劃

小組討論活動名稱	實驗組 (深度討論)	控制組 (一般討論)
教師提供討論題目(兩組相同題目)	實施	實施
學生組內提問練習(問題及回應練習)	實施	不實施
學生組內提問、(支持/延伸/批判)回應	實施	不實施
學生組內推論、驗證、提出結論	實施	不實施
學生跨組結論分享、相互評論成果	實施	實施

此外，針對控制組班級，也於前一週下課前，對學生介紹第二週上課進行模式，也要求第二週上課前7天內，需完成ePUB3電子書教材預讀，並於第二週上課開始時先進行課前測驗，了解預讀成效，於上課時根據前測結果講解教材內容，根據教師指定分組及討論題目，運用一般討論方式，最後於上課結束時進行課後測驗，驗證學習成效。

最後，針對上課時的議題討論部分，實驗組使用深度討論法進行50分鐘小組討論，控制組亦同，惟使用一般討論進行。首先是20分鐘提問練習，透過文本探究、情境假設、自身感受、經驗分享、新知探討等問題，以及提出支持性、延伸性、批判性回應的循環活動，增強學生的認知與思考練習，提高學生後續參與議題討論的能力與意願。以下列舉部分問題提問與回應的練習內容，以「組別」-「序號」表示學生編號。

- 2-1：如果在路邊看見有人正在販賣放生鳥，該怎麼採取行動呢？（情境假設型問題）
- 2-2：假如聽到家裡長輩準備購買動物放生，該怎麼跟他溝通？（情境假設型問題）
- 2-3：你覺得那些麻雀，被抓來擠在小小的籠子裡，有什麼感覺呢？（自身感受型問題）
- 2-4：從生物與環境的關係來看，你會支持放生嗎？（文本探究型問題）
- 2-5：在過去讀過的文章中，是否有類似行為的敘述？（新知探討型問題）
- 2-1：我覺得你的說法很有道理。（支持性回應）
- 2-2：除了這些證據以外，我還有想到另外一個例子。（延伸性回應）
- 2-3：這個說法不是不行，但是…。（批判性回應）

在完成提問練習後，學生接著針對教師提供的討論題目進行30分鐘組內深度討論，並於結束時提出結論，以做為後續跨組分享及相互評論的依據。以下為教師提供的討論題目：「看了『放生』一文後，你對於人們『放生』的作為，有什麼感受？」而各組學生即以問題為核心，進行組內問題提問與回應的循環活動，以下列舉部分問題提問與回應的循環式討論內容（以「組別」-「序號」表示學生編號）：

- 1-2：在你們週遭有聽過有人做過放生這種事嗎？（新知探討型問題）
- 1-3：我想到以前我嬸嬸也請魚販幫她訂魚，她就騎機車去水庫放。（延伸性回應）
- 1-4：我覺得為什麼人類總是站在自己的角度去做事，想想這樣對魚好嗎？（批判性回應）
- 1-1：琦君女士看到籠裡的麻雀很可憐，若是你們是那些麻雀，有什麼感覺呢？（自身感受型問題）
- 1-2：當然痛得要命呀！被關的、被折斷翅膀的可不是那些高高在上的人類呀。（支持性回應）
- 1-3：假如不以宗教目的來看放生儀式，從生物與環境的關係來看，你會支持放生嗎？（情境假設型問題）
- 1-4：當然不會！放生會造成環境食物鏈的破壞，也對生物適應不良。（延伸性回應）
- 1-4：提倡放生是一件沒有意義的事，沒有抓走這些動物，就沒有放生的問題。（延伸性回應）
- 1-2：該怎麼拯救那些被放生的生物？阻止那些不明智放生的人？（批判性回應）
- 1-3：舉發金額提高！（支持性回應）
- 1-1：請政府清查動物買賣帳目，或立法保護。（支持性回應）
- 1-4：讓里民自發性查核及糾舉。（支持性回應）
- 1-1：要是已經放生了，該怎麼處理後續發生的問題？（情境假設型問題）
- 1-2：把牠撈起來，處理牠的屍體。（支持性回應）
- 1-3：讓大自然分解牠吧！（支持性回應）

此外，各組的討論過程，均要求其中一位學生錄音並事後做成簡要文字記錄。在完成小組深度討論後，全班學生進行30分鐘的跨組分享及相互評論，以深化議題討論的效果，並由教師給予講評及建議，以提供學生自我評量與省思的參考。

### （三）「放生」單元課程成效評量

#### 1. 實驗組及控制組學習成效對照分析

在分別完成實驗組及控制組的實務教學後，兩組均透過15分鐘的課後測

驗（實驗組49人、控制組42人完成測驗），以驗證學生的學習成效。由於後測以驗證學生的閱讀理解应用能力為主，因此我們以一題應用型問答題：「琦君『放生』一文所描述的放生事件，時序和心境上的變化有那些層次？」來命題，並於測驗後以評量尺規做為評量標準（如表1所示）。為了驗證實驗組的學習成效是否優於控制組，本研究提出以下的研究假設：「於ePUB3電子書翻轉式學習模式下，應用深度討論於閱讀理解的學習成效優於應用一般討論的學習成效」。由於此課程要求學生於課前預讀教材，但學生預讀的習慣與成效有所不同，因此有可能影響到課程的最終學生學習成效。為了排除不同的課前預讀成效對於最終學習成效的影響，本研究採用單因子共變數分析（Analysis of Covariance）以排除前測成績對於後測成績的影響，其中共變數為前測成績，自變項為組別（實驗組、控制組），而應變項則為後測成績。

表7為組內迴歸係數同質性檢定摘要表，檢定結果顯示，在「重點剖析」、「整合詮釋」、「歸納應用」與「整體試題」等四個項目的 $F$ 值分別為2.471、0.017、0.000與0.787，而 $p$ 值則分別為.102、.895、.995與.378，由於所有檢定項目的 $p$ 值皆大於.05，表示在這四個項目的實驗組與控制組迴歸線斜率相同，符合共變數分析的組內迴歸係數同質性前提假設，因此可以進行共變數分析。表8則為共變數分析摘要表，其四個檢定項目的 $F$ 值分別為33.299、20.609、4.104與39.942，而 $p$ 值則分別為.000、.000、.046與.000，由於所有項目的 $p$ 值皆小於.05，表示此四個項目在排除前測成績的影響後，實驗處理效果顯著。

此外，實驗組的調整後平均分數分別為32.122、20.000、21.675與75.878，而控制組的調整後平均分數分別為30.120、20.429、20.926與71.499，在顯著水準為.05的情況下，此四個項目的實驗組學習成效顯著優於控制組學習成效。由於在「整體試題」的平均分數上，實驗組顯著優於控制組，故而支持了本研究假設，也就是應用深度討論於ePUB3電子書翻轉式閱讀理解學習的成效是優於應用一般討論於ePUB3電子書翻轉式閱讀理解學習的。

2. 實驗組學生滿意度問卷調查

針對學生對於本課程滿意度調查，本研究於實驗組上課結束後，根據表3以問卷調查方式進行。由問卷調查結果可知，學生回應此8個題目的平均分數（標準差）分別為5.16(.73)、5.23(.77)、5.24(.74)、5.05(.91)、5.02(.92)、5.06(.89)、5.15(.81)，以及5.13(.78)，皆達到7個等級中的「良好」（5分）等級（僅

表7 實驗組與控制組學習成效後測之  
組內迴歸係數同質性檢定摘要表

評分項目	Type III SS	df	MS	F值	p
重點剖析	6.618	1	6.618	2.471	.120
整合詮釋	0.048	1	0.048	0.017	.895
歸納應用	0.000	1	0.000	0.000	.995
整體試題	8.563	1	8.563	0.787	.378

表8 實驗組與控制組學習成效後測之共變數分析摘要表

評分項目	組別	人數	調整後 平均數	F 值	p	η <sup>2</sup>
重點剖析	實驗組	49	32.122	33.299**	.000	.275
	控制組	42	30.120			
整合詮釋	實驗組	49	22.000	20.609**	.000	.190
	控制組	42	20.429			
歸納應用	實驗組	49	21.675	4.104*	.046	.045
	控制組	42	20.926			
整體試題	實驗組	49	75.878	39.942**	.000	.312
	控制組	42	71.499			

\*p < .05, \*\*p < .01.

次於6分的最高等級)以上，可見學生普遍對於使用深度討論進行ePUB3電子書翻轉式閱讀理解學習是滿意的，未來也會優先選擇採用此模式上課的課程。

此外，根據問卷調查題目之後的文字回饋區域中，學生所提供的學習心得與感想文字性敘述可知，學生對於此單元的學習，普遍表示正面的支持態度，以下列舉部分回應：

(1)使用ePUB3電子書翻轉式學習

我喜歡上課前能夠先預讀，這樣上課時就有概念，也可以有充足的時間寫筆記和查資料。(逐字稿編碼#02)

我覺得電子書會提升閱讀樂趣，有影片的穿插，比紙本印象深刻。(逐字稿編碼#03)

(2)使用深度討論

以往在小組討論裡大家不是很認真，現在需要記錄討論過程，大家也比較專心了。(逐字稿編碼#03)

深度討論鼓勵大家分享對於問題的看法，因為之前有先練習過怎麼提問及回答，可以讓我們自己進行討論，大家也願意參加討論讓我知道同學的想法，滿好的。(逐字稿編碼#04)

(3)整體感想

我覺得使用翻轉方式跟深度討論上課十分新鮮，電子書比起紙本書更有趣，深度討論也可以讓討論很熱鬧，這樣對學習也更有幫助。(逐字稿編碼#03)

我喜歡這樣的翻轉方式上課，可以自己看電子書的內容，也可以讓我跟同學一起討論可能的答案，整個上課的氣氛很不一樣！(逐字稿編碼#04)

最後，根據以上質性資料，進一步使用模板式分析法(Template Analysis Style)將學生的上課心得與感想記錄轉換成抽象概念並建立本研究的代碼系統(Crabtree & Miller, 1999)。根據本研究目的而預建「翻轉式閱讀理解學習(A)」這一項主旨代碼以及「ePUB3電子書翻轉式學習(B)」與「深度討論(C)」這兩項子代碼的層級結構，並在此層級結構之下，從上課心得與感想記錄擷取出「自

主閱讀(B1)」、「吸引力(B2)」、「有用性(B3)」、「自主討論(C1)」、「接受度(C2)」等五個分類項目，以及各分類項目下總共十三項的代碼。最後，將主代碼與子代碼合併，形成如圖4的代碼系統。根據此代碼系統，受訪學生在ePUB3電子書翻轉式學習方面所關注的議題主要為自主學習以及教材吸引力與有用性，而在深度討論方面，受訪學生關注的議題主要為自主討論以及接受度。

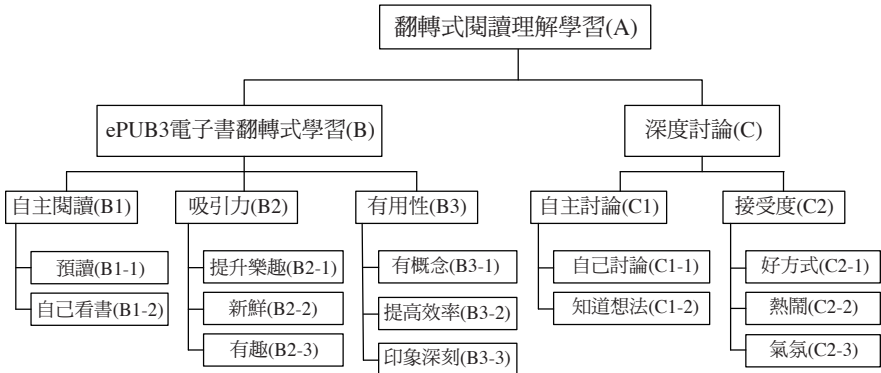


圖4 本研究之代碼系統

(四) 研究結果及討論

由前述的「散文選讀」「放生」單元課程實務教學與成效評量結果可知，本研究所提出的應用深度討論於ePUB3電子書翻轉式閱讀理解學習課程設計，對於學生的閱讀理解學習是比應用一般討論更有成效，而學生亦普遍支持使用這種模式進行學習，因此也驗證了本研究設定的兩個研究問題。

然而根據實務教學的經驗及成效評量的結果，本研究經由與任課教師的討論而對於應用深度討論於ePUB3電子書翻轉式閱讀理解學習，有以下心得：

- 1.應用深度討論於ePUB3電子書翻轉式閱讀理解學習時，深度討論的活動規劃非常重要，需要以學生為主體、透過學生自主性的互動及分享持續進行討論，而為了誘發與持續討論，教師需引導討論的進行，並要求學生先針對教材內容進行提問練習，以透過問題提出與回應的循環活動，增強學生的認知與思考練習，提高學生後續參與議題討論的能力與意願。之後於議題討論時，鼓勵學生彼此提問、分享，以及回應，在組內取得結論的推論及證明後，引導學生進行跨組分享及相互評論，使學生能獲得更多元化的理解內容，豐富其對問題本質的思考與判斷。
- 2.由於課程進行主要以學生自行閱讀教材及參與學習活動為主，教師需要隨時輔導或處理學生遇到的問題，例如講解教材時學生操作電子書不順暢，深度討論時學生彼此間產生爭執等，因此隨時關注學生學習狀況，發現問題了解原因，並給予適時協助或輔導，就顯得更為重要。然而，也由於課程以學生自



行閱讀教材及參與學習活動為主，提高了學生閱讀教材內容以及參與學習活動的意願，如此也減輕教師要求學生閱讀教材以及參與活動的壓力。

3. 透過問卷調查，教師除可了解學生對於課程進行的滿意度，更重要的是能夠了解自己教學上的可能缺失，例如題目 Q4-Q6 有關使用深度討論進行學習的評量分數較低且標準差也較大，如此亦反映出部分學生對於使用深度討論進行學習感到有可以改進的地方。經過了解後得知，主要是因為部分學生覺得，深度討論的進行應該要更完整，例如分享及互評後就進行課後測驗，並沒有機會再去討論修改原本的答案，感覺相當可惜。針對此點，本研究認為值得於未來工作加以詳細探討。

## 五、結論與建議

### (一) 研究成果及貢獻

本研究著重於如何應用以深度討論為核心的 ePUB3 電子書翻轉式學習模式於閱讀理解學習，並針對運用此模式的課程進行設計，使課程能運用深度討論法，增加學生分析與綜整的能力，以提升閱讀理解學習的整體成效。接著，本研究運用所提出的課程設計於某大學「閱讀教學」課程「散文選讀」「放生」單元的實務教學與成效評量，而經由準實驗研究法實驗組與控制組對照分析以及學生滿意度調查的結果可知，本研究所設計的以深度討論為核心的 ePUB3 電子書翻轉式閱讀理解學習課程，對於學生重點剖析、整合詮釋、歸納應用等能力的培養是比應用一般討論更有成效，而學生亦普遍支持使用以深度討論為核心的 ePUB3 電子書翻轉式學習模式進行學習，特別對於應用深度討論進行小組討論更是相當滿意。此外，由於課程主要以學生自行閱讀教材及參與學習活動為核心，教師改以輔導或處理學生問題為主，而如此使用 ePUB3 電子書教材，不僅使得學生可依自己喜好彈性閱讀，更提高了學生參與學習活動的意願，如此也減輕不少教師協助或輔導學生參與學習活動的壓力。

因此，本研究提出以深度討論為核心的 ePUB3 電子書翻轉式閱讀理解學習課程設計、ePUB3 電子書教材，以及應用深度討論於 ePUB3 電子書翻轉式學習課程實務教學等內涵，可提供閱讀理解教學領域的先進及同好參考，並期許本研究的成果能對閱讀理解的教與學產生更多正面成效與影響力。

### (二) 研究限制及未來研究建議

本研究對於深度討論的實施流程以及學生學習成效及滿意度的驗證，仍有可加強之處。因此，未來可持續應用於其他學校或單位的閱讀理解學習課程，以強化本研究的成效驗證。此外，閱讀理解學習課程多包含文本主題與性質不同的多個單元，例如現代文學、古典文學、實務應用等，由於各單元的性質不

同，教材與教法亦將有所不同，因此如何應用本研究所提出的課程設計於不同單元，透過「行動研究」方法（張德銳，2013；蔡清田，2000，2015）的循環式提問與帶領以及質性與量化分析，以深化學生學習成效及滿意度的評量，將可成為未來的研究重點。

此外，運用ePUB3電子書翻轉式學習模式時，除了以深度討論為核心外，亦可搭配使用不同的教學方法，例如探究式學習（inquiry-based learning）或情境式學習（situated learning）等，例如以探究式學習或情境式學習為核心的ePUB3電子書翻轉式學習模式，而如何規劃這些模式的學習活動，以及設計與製作配合這些學習活動進行的ePUB3電子書教材，使這些教學方法能透過適當的ePUB3電子書教材以及翻轉式學習活動加以完成，就顯得相當重要，未來本研究也將朝此方向做深入的探討。

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# The Application of Quality Talks on the ePUB3 eBook-Based Flipped Design and Teaching of “Reading Comprehension” Courses

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## Abstract

*In recent years, “reading comprehension” has become one of the core general education courses in colleges. Meanwhile, flipped learning is a common way used in domestic education sectors for the teaching of these “reading comprehension” courses. This paper explores how to employ quality talks in the ePUB3 eBook-based flipped learning and hence proposes a quality talk-centric ePUB3 eBook-based flipped learning “reading comprehension” course design for increasing the learning effects of students’ “reading comprehension”. Then, it applies this design to the “prose reading” unit of a “reading teaching” course in a local university to design its ePUB3 eBook contents and quality talk mechanisms. For assessment, a quasi-experimental study on the control analysis and its accompanied questionnaires are conducted to verify students’ learning effectiveness and satisfaction of applying quality talks to the ePUB3 eBook-based flipped learning in “reading comprehension” courses. The research results show that the proposed course design, through the quality talk-centric ePUB3 eBook-based flipped learning, can produce the better learning effects of students’ “reading comprehension” than that through the general talk-centric one. Further, students also satisfy using this approach in their learning.*

**Keywords:** *Quality talk, Teaching practice, Course design, Reading comprehension, Flipped learning, ePUB3 eBook*

## SUMMARY

In recent years, “reading comprehension” has become one of the core general education courses in the domestic education sector. Meanwhile, flipped learning is a common way used in schools for teaching the “reading comprehension” courses. It encourages students to preview the learning contents before classes, and then to discuss designated topics in classes to complete the learning of reading comprehension. However, although there are already many teaching experiences in such flipped classes for “reading comprehension” in the

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domestic schools, most of these classes use videos as their teaching media; the delivery of learning contents is less flexible to accommodate students' diversified learning needs. Since flipped learning encourages students to preview learning contents before classes and to participate in topic discussions during classes, how to deliver learning contents through suitable ways for enhancing the effects of students' reading contents and encouraging student participation in discussions has become a critical issue in the teaching of the flipped "reading comprehension" courses.

To address this issue, some enhanced delivery ways of learning contents using ePUB3 techniques had been presented in earlier research works. Afterwards, they were applied to some flipped classes for "Applied Chinese" courses. In these classes, students previewed learning contents in ePUB3 eBooks before the classes. Then student-centric discussions were conducted during the classes. Based on these experiences, although the effects of students' reading contents in ePUB3 eBooks could be concluded, some shortcomings of using ePUB3 eBooks in the flipped "reading comprehension" courses were found. This is because the "reading comprehension" courses are mainly for enhancing students' abilities of analyzing, interpreting, and applying the content. It is thus necessary to develop these abilities through effective topic discussions in the classes. However, existing teaching experiences reflect a major problem. That is, the current topic discussions are conducted in a way of general group discussions. Due to the lack of effective guidance or structured methods, there are often no organized communications or logical inferences in the discussions. This makes students unable to figure out effective conclusions, thus reducing the effects of these discussions. Students therefore cannot gain an effective development for their "reading comprehension" abilities.

Therefore, this paper expands the existing ePUB3 eBook-based flipped learning by exploring how to enhance the effects of students' topic discussions. For this, the emerging quality talk (QT) method is used during the discussions to provide the students with a more robust discussion environment for learning "reading comprehension". Since an enhanced environment can increase students' willingness to participate in the discussions through the QT-emphasized interactive questions/responses and collaborative problem solving, the students' cohesiveness during the discussions can be strengthened for drawing effective conclusions and hence their "reading comprehension" abilities can be better developed.

Further, for realizing the application of QT in ePUB3 eBook-based flipped learning and verifying its effectiveness, a lesson design process is explored that specifies the lesson plan for using ePUB3 eBooks in students' reading

and deploying QT in their topic discussions. In general, this process takes considerations of the flipped learning of the “reading comprehension” courses, the curricular contents of ePUB3 eBooks, the QT method for topic discussions. Hence, it has the following four steps:

### **1.Ensure the learning objectives/teaching strategies of a “reading comprehension” course**

In general, the first step of designing a course is to confirm its learning objectives and teaching strategies. This is because the learning contents and activities of a course should be designed for achieving its objectives and strategies. Therefore, this step focuses on the identification of the course learning objectives and teaching strategies as follows.

- As mentioned earlier, a “reading comprehension” course is designed to enhance students’ abilities of analyzing, interpreting, and applying the course content. Its learning objectives can thus be identified as: (1) analyzing the course content for identifying focuses, (2) interpreting the course content for recognizing the meanings, and (3) applying the course content for innovative uses.
- Based on the learning objectives, it is time to formulate the teaching strategies applied to achieve these objectives. Specifically, teaching strategies can be tailored based on the following considerations: (1) teaching methods (e.g., direct teaching, online learning and inquired discussion), (2) teaching ways (e.g., class, group and individual), and (3) teaching activities (e.g., reading contents, explaining contents, producing products and solving problems). Therefore, for a “reading comprehension” course, its teaching strategies can be formulated as: (1) individual online learning before the course class (reading contents), (2) class direct teaching of learning contents in the class (explaining contents), and (3) group topic discussions in the class (solving problems), to achieve the objectives of developing students’ abilities of reading comprehension.

### **2.Specify the learning activities of the course**

In general, this can be completed by the following works (steps)

- Identify the learning activities based on the formulated teaching strategies. Since the course is student-centric (student-centered) under the ePUB3 eBook-based flipped learning mode, teachers can identify the learning activities according to the teaching strategies and any necessary evaluation: (1) before a class, students preview the curricular contents of the ePUB3 eBooks used in the class, (2) at the beginning of the class, students take a pre-class test for evaluating the effect of the preview, (3) in the class,

teachers give a lecture based on the results of the pre-class tests to enhance students' essential knowledge for improving their participations in group discussions, (4) in the class, students conduct the group topic discussions and develop their abilities of reading comprehension, and (5) at the end of the class, students take a post-class test for evaluating what they have learned from the class.

- Design the specifics for the aforementioned group discussions (4) based on the QT method. As mentioned earlier, QT emphasizes the use of interactive questions/responses and collaborative problem solving to increase students' willingness to participate in discussions and then to strengthen their abilities of gathering consensus to figure out effective conclusions. Therefore, teachers can design the following group discussion specifically based on both of the QT method and feedback and evaluations: (1) teachers explain the QT process before the discussions, and ask students to practice the interactive questions/responses—asking questions (e.g., inquiring texts, sharing experiences, and exploring knowledge) and responding to the questions (e.g., supportive/extensive/critical responses), (2) students conduct the discussions using the interactive questions/responses method for solving the topics designated by teachers, (3) students complete the inferences, verifications, and presentations of the conclusions. Since students already have experiences in cognition and thinking, and have also practiced the QT-emphasized collaborative problem solving by sharing ideas, inquiring hypotheses, and providing evidences, their cohesiveness in the discussions can be strengthened to gather consensus for figuring out effective conclusions, (4) students share and comment their conclusions and teachers give adequate comments and suggestions for assisting their self-assessments and reflections.
- Specify the learning activities based on the above activity identifications and discussion designs where learning contents, times, and resources (e.g., teaching assistants) are specifically considered. As such, the learning activities for a “reading comprehension” course can be specified as follows: (1) before a class (7 days), students preview the ePUB3 eBooks, (2) at the beginning of the class, students take a pre-class test (5 minutes) for evaluating the effects of their preview, (3) in the class, teachers give a lecture (10 minutes) to enhance students' essential knowledge, (4) in the class, students conduct the group topic discussions (50 minutes) to develop their abilities of reading comprehension, (5) in the class, students share

and comment their conclusions and teachers give adequate comments and suggestions (30 minutes), and (6) at the end of the class, students take a post-class test (15 minutes) for evaluating what they have learned from the class.

### **3.Design and construct the contents of the ePUB3 eBooks used in the course**

This step focuses on the content design and construction of the ePUB3 eBooks used in the course. In general, this work can be achieved by considering what the curricular contents are and how students can take advantage of ePUB3 eBooks and embedded functions (e.g., various templates, multiple media, interactive communications, and dynamic displays) to increase the effects of students' reading contents and participating in their QT-centric discussions. After designing the contents and embedded functions of the ePUB3 eBooks, the construction can be easily achieved by using many applicable tools such as ViewPorter, InDesign, and Calibre. Considering the features and the quality of constructed artifacts, ViewPorter is used herein to construct these ePUB3 eBooks for the course.

### **4.Instruct and assess the classes of the course**

After constructing the ePUB3 eBooks, the course can be instructed according to the class schedule. In this step, each class is instructed based on the learning activities specified above. For assessment, two ways are conducted as follows.

- (1)A quasi-experimental study on the control analysis of experimental and control groups is conducted to verify students' learning effectiveness of applying QT to the ePUB3 eBook-based flipped learning in the class.
- (2)Accompanied questionnaires are conducted to verify students' preferences of applying QT to the ePUB3 eBook-based flipped learning in the class.

For illustration, the process above was applied to the 'prose reading' unit of a 'reading teaching' course in a local university. For assessment, a quasi-experimental study on the control analysis of experimental and control groups and the accompanied questionnaires were conducted where (1) these two groups had 49 and 42 students respectively, (2) they had similar enrollment ages, scores, and backgrounds, and (3) they had no learning experiences on flipped learning, ePUB3 eBook, and QT. After the research, its results show that the proposed course design, through the QT-centric ePUB3 eBook-based flipped learning, can produce the better learning effects of students' "reading comprehension" than that through the general group discussions. Further, students also satisfy applying QT to their ePUB3 eBook- based flipped learning.

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# International Students' Tutoring Experiences and Cultural Awareness in the Digital Learning Companion Project<sup>ψ</sup>

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## Abstract

*This study explored international students' experiences in online tutoring of remote learners from four elementary and junior high schools in Taiwan. A second objective of the study was to investigate whether online tutoring cultural exchange between the international students and the remote learners could promote cultural awareness. 39 international students from a Taiwanese university were paired with 39 Taiwanese remote school learners. The international students reflected on their tutoring experiences and cultural awareness using both videos and essays after participating in the online tutoring program for a period of ten weeks. The results indicated that by participating in the program, the international students gained some skills in teaching, learned a new language, received encouragement from their peers, and helped the tutees to gain confidence to communicate using English more. The international students also appreciated the opportunity that the project gave them to exchange their culture with the students of Taiwan. Although some of them faced a language barrier challenge, they were able to learn about some aspects of the culture of Taiwan from the tutees. Thus, being a more cost effective option for learning a culture than for instance visiting a country to learn a culture, learning institutions could provide opportunities and encourage students to participate in such cultural exchange programs.*

**Keywords:** Online tutoring, Online tutoring experience, Cultural exchange, Cultural awareness

## Introduction

The use of digital technologies to support live teaching and learning can extend the reach of traditional teaching and learning space to provide the learners

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with ubiquitous learning opportunities and massive benefits (Higgins, 2004). Such a learning platform is online tutoring, which offers opportunities and possibilities to reach remote individuals with diverse socio-economic status (Bruning, 2011) through the use of interactive communication technology provided for by the Internet and Web 2.0. This way, students with learning difficulties in rural areas can always be identified and supported. Corrigan (2012) defines online tutoring as provision of a personalized learning support to a single or small group of learners by the teacher, also called a tutor, through the Internet.

While traditional tutoring relies on a one-on-one meeting and has been used to provide remediation to students on subjects that they are weak in, online tutoring has leveraged the advancements in technology and network connectivity such as Web 2.0 that supports synchronized and real time communication to create virtual classes where the tutors and tutees can meet and learn (Peacock et al., 2012). In addition, the ability of online tutoring to combine effective elements of conventional tutoring programs, such as well-trained and competent tutors, project and problem based learning curricular coupled with active learning resources etc. gives the online tutoring a cutting-edge advantage. For instance, online tutoring is able to provide synchronous one-to-one and real time services to reach learners in both busy urban areas and rural remote schools (Chappell, Arnold, Nunnery, & Grant, 2015).

Through the use of telecommunication technologies, online tutoring provides authentic experiences to tutors which can help them to increase their capabilities such as provision of individualized instruction, improving language and communication skills, and cultural exchange (Cifuentes & Shih, 2001). In addition, from the experience of tutoring, college students are provided with an opportunity to obtain practical knowledge on issues such as time management, preparation of tasks, problem solving, and teaching activities (ChanLin, 2016).

With advancement in technology, people are now able to learn and interact with different cultures and languages without necessarily attending a formal traditional class learning setup by leveraging digital opportunities such as tele-collaboration that enables for instance, language learners to converse with the native speakers of the language remotely—i.e., without the need to meet them physically (Çiftçi & Savaş, 2018). This is because people can now take advantage of advancement in technology and easy access to the Internet from the computing personal devices to interact with people across cultures that has led to intercultural interactions and exchanges based on tele-collaboration (Shadiev, Wu, Sun, & Huang, 2018). This has broken the boundaries and increased global interconnectedness and intercultural interactions. For instance, through virtual exchange programs, students can explore cultural practices to prepare them to



live in a culturally diverse society, whether at home or when interacting with the culture abroad (Schenker, 2013).

Cultural awareness is one of the key competencies for individuals to interact in the 21st century due to globalization (Schenker, 2013). This is because globalization has led to global challenges which can only be solved by building new links between countries and cultures (Talalakina, 2010). Notably, an increased awareness helps individuals appreciate a target culture. This helps them challenge stereotypes they could be having about that culture (Hertel, 2003). Individuals may learn culture through various ways including direct and indirect contact with people from other countries, visiting other countries, watching foreign movies, and use of computer mediated communication (CMC)—text based tools such as online discussion boards and video conferencing (Angelova & Zhao, 2015; Cardon, 2010).

Online tutoring supports the learning of students in rural areas since these students have limited learning resources and support (ChanLin, 2016). The need for this project arose due to two reasons. First, due to geographical limitations, rural school children in Taiwan have few or no opportunities to interact with foreigners to engage in discussions and exchange cultural viewpoints. Second, international students in Taiwan come from various countries of the world and for most of them this could be their first time in a foreign country. Thus, for most of them adjusting to the culture of Taiwan could be a challenge due to cultural shock they may experience, and stress as they try to adjust to a new culture and learn a new language (Yang, Webster, & Prosser, 2011). Moreover, being miles away from home, they may lose friendships and networks they had established hence the need to form new social support networks. Therefore, it is necessary to provide them with effective means that can help them to interact with the locals to be able to gain some useful information that could assist them live in a society which is culturally different from what they are used to. With the aid of modern information and communication technologies, online exchange is considered as an effective means for the local and international students to interact and exchange their cultures. This interaction also provides an opportunity for the children to practice their English speaking skills in an authentic learning environment.

This opportunity to exchange cultural viewpoints is beneficial to both the Taiwanese and the international students beyond the educational setting since the world is increasingly becoming multicultural as a result of globalization. Therefore, the students need to be provided with opportunities that can prepare them to live and work in a multicultural society, for instance, in the professional world (Czerwionka, Artamonova, & Barbosa, 2015). Moreover, an increased cultural awareness makes individuals more tolerant to people from cultures



different from theirs (Tomlinson & Musuhara, 2004). This is because with increased cultural awareness people from different cultures are able to understand their cultural differences resulting to peaceful relationships (Shadiev et al., 2018).

Through this online tutoring project, referred to as “Digital Learning Companion” and hereafter referred to as “DLC” project, the rural students are partnered with international digital companions (international students) from various countries in the world thereby providing the students with greater educational opportunities and overcoming geographical limitations (Cheng, Liu, Ko, & Lin, 2007). The purpose of the project was majorly for cultural exchange and not for English language learning although it provided an opportunity for the tutees to practice their English speaking skills. The international students provided one-to-one tutoring to online tutees from remote areas of Taiwan through an online tutoring platform. Through assigned topics, the tutors and tutees exchanged cultural knowledge. We partnered the international students with the rural students so as to provide the rural students with opportunities that they may not be able to have like their counterparts in the city. Compared to college students or elementary school students in the city, rural school children are more disadvantaged. For instance, rural students not just in Taiwan, but worldwide face challenges such as insufficient and ill-developed infrastructure like inconvenient transport, inadequate learning resources such as few qualified teachers and facilities, and economic challenges such as limited financial support. Therefore, we hope that this project can have a social impact on the rural community as the international students could provide support to the rural students. For the Taiwanese students, this project provides them with an opportunity to interact with foreigners and to engage in discussions and to exchange culture since they have limited educational resources due to time, space, and geographical limitations (Cheng et al., 2007). Although the rural students speak mostly Chinese, they could speak basic English since they start to learn English from the first grade according to the curriculum enforced by the Ministry of Education in Taiwan (Lin & Iverson, 2012). However, they needed to be encouraged to use English since they were shy to speak in English because rural school children in Taiwan do not consider English as a relevant and an important subject, and they also lack opportunities to practice speaking English (Lin & Iverson, 2012).

Similar online tutoring programs have been conducted but their focus has been on offering tuition to rural students in Taiwan to improve performance in areas such as Mathematics, English, and Chinese (ChanLin, 2016; ChanLin, Lin, & Lu, 2016; Huang & Liu, 2015). These studies also used Taiwanese college students as tutors. As such, there is need to investigate the possibility of leveraging online tutoring for cultural exchange and general exposure to other

ways of life. This was the focus of this study. Thus, this research investigates the online teaching and learning experiences of international students at a university in Taiwan to identify some cultural learning aspects, benefits, and challenges linked with the cultural exchange project. Since it was the first time for the international students to participate in the project, through studying their experiences, we could be able to understand how they interacted with the local students. This knowledge could be useful for evaluating the project and for improving future similar projects that would be conducted.

The specific objective is to provide evidence for whether participating in online tutoring by international students in Taiwan with students from Taiwan increases their cultural awareness about Taiwan in aspects such as food, clothing, among others. This article attempts to answer the following research questions based on preliminary findings obtained from the data collected during the study:

1. What are the experiences—benefits, likes, dislikes, and challenges—of international students in the DLC project?
2. Does the DLC project facilitate cultural awareness?

## **Research Method**

### **Study Context**

The DLC project was implemented for a semester. International students at a university in Northern Taiwan were paired with junior high school or elementary school students from different rural areas in Taiwan. Four schools participated in the project. The international students were recruited at the beginning of the spring semester of 2018 based on how passionate they were about teaching the tutees and their skills and motivations for taking part in the project.

The recruited tutors were oriented on how to use the JoinNet system—the online learning platform that was used in this study—by the project support team. They were also trained on how to prepare the teaching materials like the lesson plan and the teaching slides by experienced members of the project support team who were experienced student teachers. They were guided on some of the activities they needed to include in their teaching materials. This was to ensure that the materials prepared by the tutors were standard across all the tutors. The tutors were also given some background information about the project, for instance, some information about the rural students. The project lasted ten weeks. The tutors and tutees were expected to exchange cultural information, apart from a general discussion, about their countries based on the following topics: food, clothing, transportation, housing, entertainment, and famous scenery. In general, based on each topic, tutors gave brief introduction of their countries of origin then asked the tutees to talk about their countries. Figure 1 shows some screenshots

of the contents of the teaching materials prepared by the tutors. Each topic was discussed once a week except for food, entertainment, and famous scenery which were discussed for two weeks. Each tutor prepared his/her own teaching material and content based on the given topics every week. They were also at liberty to use teaching strategies that they found to be effective for them and their tutees. To ensure that the teaching materials prepared by the tutors were effective, the tutors were required to upload all their teaching materials to the project website prior to conducting their sessions. These were reviewed by the support team to help moderate the materials prepared by the tutors. To assess the progress of the tutoring sessions and address any problems arising, all the teaching sessions were also videotaped and reviewed on a regular basis by the project support team members. Figure 2 displays a screenshot of the JoinNet platform during a tutoring session. On the whiteboard, both tutors and tutees could be able to write and make notes or browse the Internet, and they could be able to interact freely.

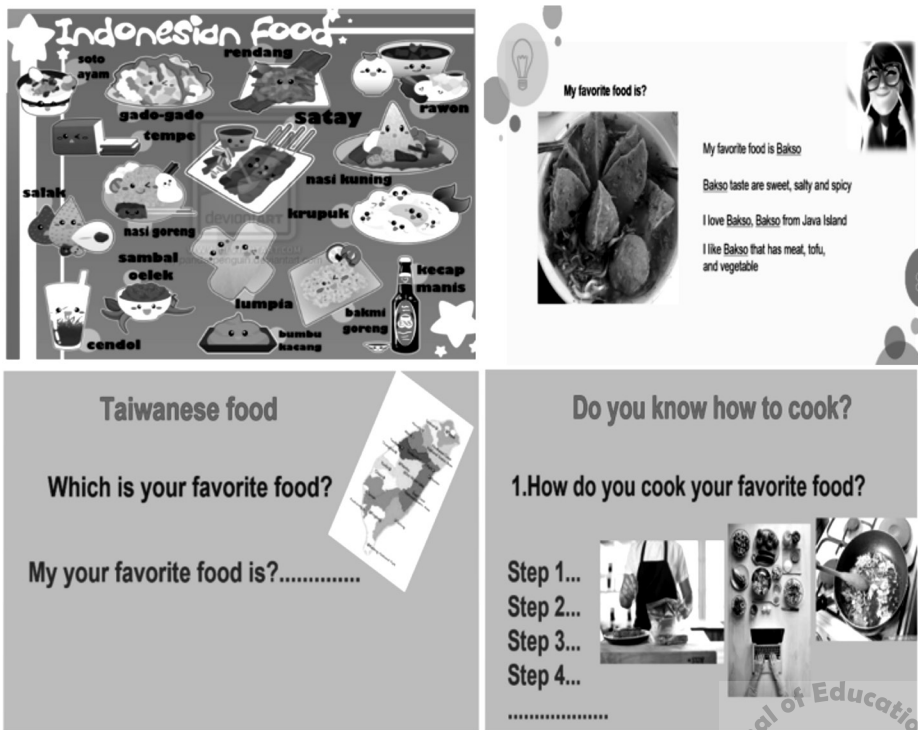


Figure 1 Sample Teaching Materials

Each tutor and tutee was provided with a PC with internet connection, headset with a microphone, and a webcam. All the tutors conducted their tutoring sessions from a central point, the university’s computer centre. There were four tutoring sessions every week for ten weeks. Each session lasted one and a half

hours. However, each tutor was assigned only one session per week. One session was conducted on Mondays from 1:30 p.m. to 3:00 p.m. Other sessions were conducted from 6:30 p.m. to 8:00 p.m. on Tuesdays, Wednesdays, and Fridays. In other words, tutors conducted a tutoring session once every week, that is, either Monday or Tuesday or Wednesday, or Thursday according to the day they were assigned. Each tutee was assigned to only one tutor for the duration of the program. Therefore, a tutee attended only one tutoring session per week lasting one and a half hours, for the ten weeks, on the same day of the week, with the same tutor. After each tutoring session, the tutors were required to write their reflection about the session in an online diary system. They also shared their experiences among themselves after the tutoring sessions starting from the fifth week of the project. Every week from the fifth week, three to four tutors shared their tutoring experiences with other tutors.

During the last two weeks of the project, the tutors were required to complete a reflection task. They were required to reflect on their tutoring experience and also reflect on what they learned about Taiwan culture through their tutees using self-created videos. The tutors were also required to reflect on their tutoring experience using a 150-word essay. The purpose of the reflections was to know about the tutors' experiences during the project and to know about how much they had learnt about the culture of Taiwan, and their perceptions on the benefits and challenges gained, from the interaction with the students from Taiwan.

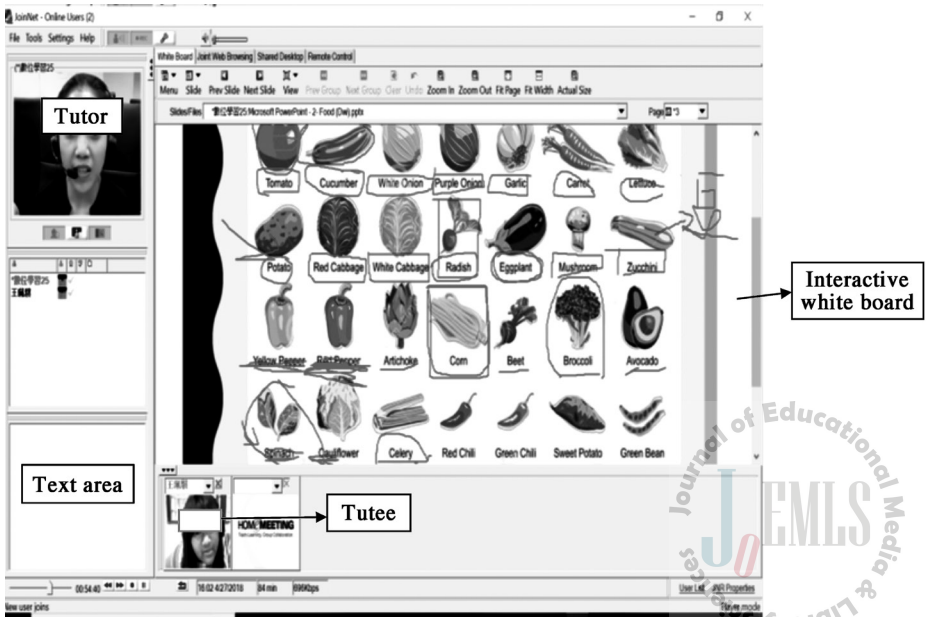


Figure 2 Screenshot of the JoinNet Platform During a Tutoring Session

Participants

The participants in this study were 39 international students from various departments at a university in Taiwan. They were paired with 39 students from some rural schools in Taiwan. Among these tutors, 18 were male, and 21 were female. The tutors were from various countries. They ranged in age from 21 to 40 years (Table 1). Since the participants are international students, the communication with the tutees was done in English.

Table 1 Demographic Information

Item	Category	No.	%	Item	Category	No.	%
Gender	Male	18	46.2	Major	Applied science	1	2.6
	Female	21	53.8		Engineering (various)	13	33.3
Education level	Master	35	89.7		Applied foreign languages	6	15.4
	Ph.D.	4	10.3		Industrial management	3	7.7
Nationality	Indonesia	24	61.5		Digital learning and education	5	12.8
	Vietnam	11	28.2		Finance	2	5.1
	Burkina Faso	1	2.6		Material science	1	2.6
	Thailand	1	2.6		Architecture	2	5.1
	India	1	2.6		Information management	3	7.7
	The Gambia	1	2.6		Business administration	3	7.7

Data Collection and Analysis

Although this study involved both tutors and tutees, the focus of this study was on the tutors only. Therefore, the analysis of tutees data is beyond the scope of this paper. However, we are in the process of formulating the second phase of this study that intends to illustrate the impact of such a project to the tutees. The data was collected using qualitative methods. The reflective videos, written reflections, sharing experiences forum discussions, and online journal entries served as sources of the qualitative data. The reflection questions for online experiences and cultural awareness were adapted from previous studies (ChanLin, 2016; Hertel, 2003; Hung, 2011; Schenker 2013)

Of the 39 tutors who participated in the project, complete data was available for only 27 tutors. Some tutors participated in all the tutoring sessions but they did not complete all the reflection tasks. To achieve data triangulation, the different qualitative data types (reflective videos, written reflections, sharing experiences forum discussions, and online journal entries) were analyzed using content analysis (Angelova & Zhao, 2015). The data from the video reflections were transcribed verbatim first before coding. Two independent researchers reviewed all the written data and generated codes to identify patterns in the tutors' reflections that represented their tutoring experiences and cultural learning which were the focus of this research. Coding consistency was analyzed between the researchers. The inter-rater reliability, 0.91, was evaluated by using Cohen's

kappa. Few differences that were obtained between the researchers after coding were discussed and resolved.

## Results

The qualitative data analysis of the contents of the online tutors' video reflections, written reflections, online journal entries and sharing experiences forums yielded the following themes characterizing the experiences of the international students during the online tutoring project: general tutoring experiences and cultural awareness. The general tutoring experiences are discussed under the following sub-themes; benefits and achievements of online tutoring—i.e., acquisition and improvement of teaching skills, language learning, cultural exchange, peer encouragement, helping tutees boost their confidence to speak English, and developing friendships and relationships—likes and dislikes of the program, challenges of online tutoring, and overall experience.

### General Tutoring Experiences

#### Benefits of and achievements from online tutoring

From the reflections of the tutors, it was found that the online tutoring benefited them in a number of ways. These benefits and achievements are discussed under the following categories: acquisition and improvement of teaching skills (both online and teaching in general), opportunity for language learning, peer encouragement, opportunity for cultural exchange, helping tutees boost their confidence to speak English, and developing friendships and relationships.

#### Acquisition and improvement of teaching skills

For most of the tutors, this was their first time to teach students. Some tutors had ever taught face to face before taking part in this project, but they had no experience about online tutoring. Among the ways in which the online tutoring helped the tutors acquire and enhance their teaching skills based on the tutors' reflections include learning to: adjust teaching strategies according to individual learners needs, use technology to teach, prepare teaching materials, manage students, do online tutoring and work with children.

Through this online tutoring, the tutors learned how to be flexible and adjust their teaching strategies according to the needs of their students for instance try to use both English and Chinese after realizing their tutees were not able to communicate fluently in English. For example, a tutor stated that:

So overall I think I understand something new here. I get many experience. The first one I cannot fix in one thing because when the situation change like my student cannot speak English, I have to change the strategy, I have to try use Chinese to approach him. (T25, video reflection)

Other strategies like use of games and inclusion of pictures were also used by the tutors to enhance the tutees' understanding. For instance, one tutor stated:

My student is not good at English as well as my Chinese. I had tried a lot I found that speaking less and adding attractive games and pictures is good methods for my student. I also employed google translate to help in explaining the meaning of new words to my student, that was good too. (T10, sharing forum)

Other tutors changed the teaching and learning activities and used both languages to prepare the PowerPoint slides. For instance, a tutor stated:

I am shocked that my student cannot say anything in English except "yes", "no", and "I don't understand". I change my PPT to be bilingual, English and Mandarin version so I provide two sentence form, first line is English and second line is Mandarin, and changing the activities to be reading more. (T15, video reflection)

The online tutoring helped the tutors to improve on how to prepare teaching materials and deliver the teaching content. For instance, a tutor indicated that "Having this opportunity has helped me improve how I prepare in various aspects such as material preparation, teaching delivery, immediate problem solving skills, and ways to manage with the student" (T02, written reflection). One tutor mentioned that "I can learn how to make best PPT (such as topic, forms, etc.) based on my student characteristics and encountered-problems" (T15, written reflection). Another tutor, further indicated that " ... I get an experience to teach to the other student from another city from Taitung. I also get the experience to teach English especially for elementary since this is also my first time to teach English for the elementary" (T32, video reflection). Apart from general teaching experience, the tutors also acquired some skills for online teaching. For instance, a tutor stated that "After that I feel like I have learned a lot from the program like online tutoring experience..." (T29, video reflection). Tutor T11 mentioned that "I really like this program a lot because it's not only the students who can gain experience and benefits but I also gain benefits as well. That I can learn how to do distance learning..." (T11, video reflection).

Apart from gaining a teaching experience, the tutors also learned ways of managing their students for instance, through preparing the teaching content in ways such that the attention of the tutee could be maintained for a longer time. Some tutors' reactions include:

My student I would say is very easily distracted. Even if I leave her for 20 seconds without something, without a video, without a puzzle, she will look around here, here, find something or go to her friend. She will do all types of things. So I need to put a video like in each slide because I



have noticed that sometimes she is not interested if I do not because I have notice that my student is very new to English. (T06, sharing forum)

A tutor mentioned about learning to manage the students' emotion "Eventually, I got valuable experiences from this project, not only pedagogic strategies, but also how to maintain and deal with student's emotion when she had been so tired of her classes at school before joining my online class each week" (T08, written reflection).

Some tutors appreciated the opportunity which helped them to learn how to work with children. For instance, a tutor mentioned that "I felt that I could learn many things. I knew how to work with children more. I think participating in DLC not a bad choice. I think DLC is very interactive. Every week is a new fun for us" (T18, video reflection). Another tutor further indicated that "After that I feel like I have learned a lot from the program like online tutoring experience, how to work well with children who cannot speak my native language" (T29, video reflection).

In terms of using technology to teach, a tutor mentioned that "It is great to utilize technology so I got the valuable experience and I know how to do in the future if I have same chance, same related-problems, etc." (T15, video reflection).

The tutors' comments indicate that they learned not only how to teach, but also how to teach online and using technology which most of them had no experience in. The tutors also learned how to provide individualized instruction based on learners' needs. Therefore, the project was useful for acquiring skills and experience necessary for their professional development. The tutors' creativity also improved through preparation of the teaching materials like PowerPoint slides.

### **Language learning**

In their reflections most tutors indicated that most of the tutees were not able to speak good English. As a result, language barrier affected their communication. To be able to communicate effectively, most of the tutors opted to use both Chinese and English to communicate with the tutees but this was a challenge to the tutors as they could not speak Chinese. Therefore some of the tutors had to learn some Chinese words from the tutees who insisted on speaking in Chinese. Other tutors had to use google translate to be able to understand their tutees. In an indirect way, they were able to learn and improve their Chinese. These are some of the tutors' reactions:

From the online tutoring, what I learn is, I learn some Chinese words from the student because she use much Chinese words because she did not know the English. And also I learned from the other tutor besides me, because she is a local student here and sometimes when I don't understand what

my student say, I will ask her and she will help me to translate it. (T23, video reflection)

“Sometimes, I had some problem to explain something completely in English, because its 100% English, and I have to pick up some words in Chinese. Thanks to google translate which helped me a lot...” (T14, sharing forum). “Not only that this program has allowed me to learn about Taiwanese culture, but it also gives me the opportunity to improve my Chinese (thanks to Mary [not her real name] for teaching me Chinese)” (T16, written reflection).

During the tutoring process, I also learn a lot. I mean, this tutoring process is not a one way learning process. It’s two-way. It means I learn and also my student also learns. So I teach her about a lot of English vocabulary, about general knowledge... and she also teach me some Chinese vocabulary.... (T13, video reflection)

Another tutor mentioned that:

... So I try to put more Chinese letter on the screen and I told him that we can share together like I will learn Chinese, he will learn English. So we can share together. He can check my Chinese and I can check his English. This may help him to feel like he is talking to a friend not just learning. I think that he is much more interested in the lesson.... (T29, video reflection)

Essentially, as indicated by the tutors’ comments, participating in the project gave them motivation to learn Chinese language which could have not happened had they not taken part in the project. Therefore, they could be able to communicate with the local community in their day to day interactions.

### **Cultural exchange**

The tutors indicated that the online tutoring gave them a chance to learn about the culture of Taiwan from the tutees and teach the tutees about their own culture. For instance, a tutor stated “... help me to learn a lot of culture in Taiwan and I teach her also about the culture in Indonesia and we exchanged the culture. So she knows more about Indonesia and I know more about Taiwan” (T05, video reflection). Another tutor indicated that:

... and the next we get the culture exchange between Indonesia and Taiwan to my students and in this part I also get to meet him because not only need support for vocabulary and grammar in English but I also can share the culture between Taiwan and Indonesia. (T32, video reflection)

Evidently, the online tutoring project facilitated cultural exchange between the tutors and the tutees. By learning about some culture of Taiwan, they could more easily fit in and have harmonious interactions with the people of Taiwan even though they are foreigners.

### **Peer encouragement**

Through sharing about their experiences with each other in the sharing forums which were conducted from the fifth week where tutors were selected to talk about their experiences, the tutors were able to learn from and encourage each other, for instance, on how to improve on the way they teach their tutees, how to solve some of the challenges they experienced, and how to prepare teaching materials. Some comments from the tutors include: “And then from my peers, from other tutors I can learn how they taught their students” (T11, video reflection). “I was also inspired by my friends. Like my friends, my Taiwanese friends they always well prepare with everything they have very fabulous, PowerPoint, they always introduce in a good way, they interact with students well” (T14, video reflection).

There is one colleague he is using a lot pictures and also using math or something to get more attention from the student. I like the idea of using the pictures or the math or something because the student can understand it. (T17, written reflection)

“I just get some inspiration from my friends. I talk to them and I just like, yeah, what happened to your student and how has been going and we talked and helped one another some problem” (T02, written reflection). Therefore, by sharing their experiences, the tutors gained different perspectives from their peers to help them make improvements in their teaching.

### **Helping tutees boost their confidence to speak English**

During the first weeks of the tutoring sessions, most of the tutors mentioned in their self-reflections that their tutees were shy and afraid to express themselves in English. Through the tutoring sessions, the tutors encouraged them to speak more and gave them advice on how to improve their English speaking skills. This involved use of varied teaching strategies like using more questions, use of google translate, chatting, speaking Chinese among others. As time progressed, as reflected in the tutors’ comments, many tutees built their confidence and were able to have conversations with their tutors. For instance, a tutor stated that:

However, on the very first meeting, I was so surprised to know that she couldn’t understand me at all. At first, I thought that maybe she can still understand a little bit of English but maybe she is just too shy to speak English but then it was totally different than what I was expecting because she kept saying I don’t understand... And changing the way I presented my materials have actually made a significant change in the way that I am interacting with Mary [not her real name]. She make a lot of improvements because she was so brave to speak English and she became very active during the class. (T16, video reflection)

Another tutor mentioned that:

So my first experience is that it is so difficult for me to teach the Taiwanese children English because they don't want to speak English too much.... After 15 weeks I found that my Taiwanese children is not really difficult as the first week I imagine. [Pause] for the last week I play games and I talk too much to my student that English is not really difficult and if you want to speak English just try to explore more. Define what you want to learn and go to school or make friends with foreigners. You can find some new words that you don't know. Just write down and use google translate to learn. You can improve your English. (T10, video reflection)

Another tutor indicated further that:

At the beginning of the online tutoring my student seems nervous and she didn't want to talk with me and she did not want to reply my words so she just remain silent. So I try to talk with them with Chinese and then she wanted to reply but it is only word by words. In the middle of the term she changed a lot, she get more excited in the tutoring and she can smile with me and talk many things also with me. At the end of the term she could understand well what I was talking about and she could reply well also. (T37, video reflection)

The tutors were happy to see the progress of the tutees as time went by. It can be implied that the tutees being from the rural area lack much needed adult role models who could teach them how to solve communication problems. The role models not only need to teach the content but also need to model how to do it. This problem can be solved using technology. Although the tutees were not the focus of this study, the comments from the tutors indicated that the tutees also benefitted and learned from the online interaction with the tutors. Moreover, all the learning experiences were recorded and as evidenced from the videos, the tutees made some progress. For instance, we randomly selected five tutoring session videos and observed aspects like interaction between the tutors and tutees, tutee participation, attention, and facial expression from the first week to the last week. As observed in some of the videos, we noticed that during the first weeks, tutees appeared shy and unwilling to talk to the tutors. The tutors asked questions but some tutees simply answered "yes" and "no". In some cases, the tutees kept calling their resident teachers to ask them what they should answer. In other cases, the tutees answered in Chinese. Some portrayed negative facial expressions most of the time and appeared not to be engaged in the session. For instance, in one video during the first week, a tutee was observed to be distracted yet it was around 30th minute in the session. The tutee was out of his seat and looking around. The tutor kept calling on the tutee to pay attention but it took a while before the tutee could settle down. Moreover, in the first weeks, it was

observed that communication between the tutors and tutees was mostly through text, not much of talking from the tutees side. However, as time progressed, in the last weeks, the tutees were noticed to be comfortable and felt much at ease. With time, they started to talk freely with their tutors and no longer seemed to depend on their resident teachers. In addition, they responded in English most of the time, they were more enthusiastic and participated actively during the sessions, payed more attention, and portrayed positive facial expressions (as shown in Figure 3). Thus with time, based on the observed videos, the interaction between tutees and tutors increased, and tutee participation and attention also improved. They were observed to be more on-task with the tutors than off-task as seen in the videos during the first weeks, and also more talkative. This implies that the project was not only of benefit to the international students but also benefitted the rural children. In fact, the tutees' resident teachers reported that the children were willing to participate in the project the following semester.



**Figure 3 Screen Shot Showing Tutee's Facial Expression During the First, Second, and Seventh Weeks**

### **Developing friendships and relationships**

Through the online tutoring process, the tutors developed friendships and relationships with their tutees which went beyond tutor-tutee relationship. They shared about their hobbies, likes, daily life, and school issues. Some even maintained the friendships after the tutoring project. Some comments from the tutors include:

And then after more meetings, the online meetings, the student become more comfortable and then she can talk more. She even talk about her daily life. How she don't like some subjects in her school. How she loves her younger sister which in the same school with her and she also talk about her interest in kebab and some of her pet mouse. She has two mice as her pets.... From the online tutoring I felt like I get new friends, new sister. My student we still in contact via Facebook. Last week she just told me about her vacation in United States. (T23, video reflection)

After a few weeks joining this program, I know better my student, I know what her hobby is, I know what her favourite food is, I know her favourite song because she always sing a Chinese song for me so like 10 minutes before the end of the class, she sang a song, and also I teach her an English

song and she also could sing about that. I don't have a good voice but I could teach her how to sing well. (T14, video reflection)

At the beginning I was wondering that whether I am suitable for this program or not because I had not ever been an online tutor. But now I can say that I love this program very much. It gave us a good chance to have many nice Taiwanese friends consisting my student Alan, other Taiwan tutor, professor and supporters together with interesting international students. We have many unforgettable memories, from strangers to friends. (T10, written reflection)

Thus, through the tutoring project, the tutees made lifetime friends who being adults could provide them with advice and guidance on various aspects of their daily life.

### **Likes about the program**

The tutors also reflected on what they liked about the program and what they disliked about the program. According to their reflections, they liked the fact that they were able to make friends with the tutees and the project support team who were students from Taiwan. They also liked the fact that the project gave them a chance to get more teaching experience. Others liked the discussion sessions that were arranged for them to share their experiences amongst themselves. Some comments from the tutor reflections include: "About our program, the most interesting I like that we can make friends with online tutor supporter and also Taiwanese children... I think that is really great" (T10, video reflection). "And what I like, [pause], I can get more experience, yeah, that's the thing because am a teacher anyway" (T02, video reflection).

And also my most favourite part is, after teaching, we have a small discussion. So the group will be divided into two and we can share what we have learnt, what we have talked with students and if any challenges we found we can share so we can solve the problem together. (T14, video reflection)

One tutor liked the fact that there were different topics for discussion each week. "What I like from this program is I like how it was arranged with various topics each week so we can talk about different topics each week and we can communicate about that" (T23, video reflection).

From the online tutoring, the tutors acquired new friends from a foreign country. This gave them a stronger sense of belonging. They also had an opportunity to learn from their peers and improve on their own skills.

### **Dislikes about the program**

Most of the tutors disliked the technical challenges they experienced and some did not like the fact that their students had basic English skills as this made

them to take more time to prepare the teaching materials. Some reactions from the tutors include: “And, [pause] I think if I have to say something I dislike about the online tutoring maybe it’s just some technical problems only” (T01, video reflection). Tutor T23 “Something I don’t like from this program is maybe because it is an online tutoring sometimes we have a problem with the connection but it is not really a problem (T23, video reflection)”.

I think the part that I get a student that cannot speak English at all. Because of the problem I need to prepare my presentation slides like I need to take a lot of time to prepare it sometimes two days is not enough because yeah I need to take the idea then to translate it and write down itself is like almost a lot of time wasted. (T17, video reflection)

From the tutors’ reactions, the major challenges faced were technical challenges like poor internet connection which inconvenienced their interaction with the tutees sometimes.

### **Challenges of online tutoring**

From the tutors’ reflections, various challenges were identified including: technical difficulties, language barrier, inattentive tutees, and tutee absenteeism.

For the technical challenges, most tutors indicated that they faced problems with the Internet speed and poor connection which resulted to frequent interruptions in the video connection. As a result, they had to rely on using the chatting feature to communicate with the tutee. Other tutors had problems with the Internet breakdown which made it impossible for the tutoring session to be held sometimes. Most tutors indicated that the poor Internet connection was mostly from the tutees side. The tutors expressed frustration that due to the Internet problem, they wasted time waiting for the problem to be solved and they were never sure whether they would have the tutoring session or not. One tutee commented that:

During the middle of the term, because of the connection error and sometimes because of the Internet breakdown, so we could not meet much. This is a pity because I wanted to meet my student every week to talk with her and to help her... so to me is a challenge because you are not always so sure about what is going to happen during the tutoring session. (T09, video reflection)

Language barrier was a challenge because some tutors could only understand English, although some could understand basic Chinese, and the tutees insisted on speaking in Chinese although they had basic levels of English. As a result of the language barrier, there were problems in effective communication, interaction, and understanding between the tutors and tutees. Other challenges included inattentive tutees who were easily distracted and bored during the tutoring



sessions and tutees who missed to attend some tutoring sessions. These occurred majorly due to the tutees lack of confidence in speaking in English. One tutor mentioned “My student also really easy to get distracted, for example, I put a picture he will pay more attention to the picture rather than the material itself. And he likes to draw on the screen” (T04, video reflection). Another tutor stated “sometimes my student is distractive and I know that I have to make my lessons more interesting and attractive” (T10, written reflection). Tutor T17 “... because I cannot interact with her sometimes when she gets bored I cannot ask her to focus onto the class...” (T17, video reflection). A tutor mentioned “My student ever escape from class once. I think because I ask her in English every time and her English speaking ability is poor” (T15, written reflection).

The technical problems and language barrier could have contributed to a not so effective exchange for some tutors and tutees as they contributed to ineffective use of time. Also, since the tutees are not used to communicating using English and not used to online learning, for most of them they felt like the online tutoring environment was threatening to them.

### **Overall experience**

Overall, the tutors expressed that they had a good experience during the online tutoring, they learnt especially how to teach online, and teach children, had fun, and expressed that the opportunity to teach online helped them enhance their job skills. They also obtained valuable communication skills. For instance, a tutor stated that:

I think it's fun it's really good experience for me because actually I never teach someone before. This is my first time teaching children. Jane [not her real name] is my first student ever. And from this program I think it is really fun. Every week is really fun. I can teach her and sometimes I get more knowledge from her, I can learn from her and it also make me get more skills for communicating with others... overall it is really fun experience. (T22, written reflection)

Tutor T02 mentioned that “Overall, I had a novel, good, exciting experience in teaching digitally. This will be definitely beneficial to my career” (T02, written reflection).

Based on the responses of the tutors, the DLC project was beneficial to the tutors since it provided them with an opportunity to acquire job experience and skills such as online teaching skills which could make them competitive in their job search. They also acquired more intercultural communication skills.

### **Cultural Awareness**

The project helped the tutors to develop cultural awareness about Taiwan by exchanging their country's culture with the tutees as they learnt about the culture

of Taiwan from them. The tutors appreciated the opportunity that the project gave them to learn more about Taiwan. The objective of cultural exchange was fulfilled by having the tutors and tutees share information about their countries with each other about the following topics; food, housing, clothing, entertainment, famous scenery, and transportation. For instance, a tutor mentioned that:

So I teach her about a lot of English vocabulary, about general knowledge and more importantly about the culture. Like my culture and also the culture around the world and she also teach me some Chinese vocabulary and about the culture in Taiwan. So this program is really useful for everyone. (T13, video reflection)

Another tutor stated:

With my lessons, [pause] we have learnt a lot from each other. I have learnt a lot from Taiwanese student. Special thing consisting of first traditional, cultural, and something like that and I teach Alan a lot of special thing in Vietnam. (T10, video reflection)

Some of the cultural aspects learned are discussed below.

### **Similarities and differences in cultures, and way of life**

The tutors also learnt about the similarities and differences in their culture and that of Taiwan. For instance, a tutor indicated that:

And with joining this program, I can learn also about the Taiwanese people, Taiwanese culture and even there is some difference in our culture between Taiwanese culture and Indonesian culture such as housing, clothing, transportation, and also about the taste of the food is a little bit different but in general is a lot of common thing, the same between Taiwanese and Indonesian culture. And everything in this experience is enrichment my awareness about Taiwanese culture about the different culture between Taiwan culture and also Indonesian culture. (T27, video reflection)

Other reactions from tutors are: "From this program I found that we have many similar culture between Vietnam and Taiwan but also different" (T10, video reflection). "I have myself learnt a lot of things about what are the similarities and differences about both the cultures and about the places and about the clothes" (T06, video reflection).

Some tutors and tutees shared about their personal lives through the cultural exchange. For instance, Tutor T02 mentioned that:

... and for me it was about the culture awareness. I learn about how they like to eat in the morning. Like the student they don't like any international food at all. They just like local ones like noodles, rice, and other things they don't like.... (T02, written reflection)

Thus, the DLC project helped the tutors to increase their awareness about

their similarities and differences between their cultures and the culture of Taiwan and the people of Taiwan. Their knowledge of Taiwan culture also increased.

### **Challenging of stereotypes**

Through the cultural exchange, some tutors changed their negative perceptions and conclusions they had formed about issues like food in Taiwan. For instance, a tutor mentioned that:

[Pause] about the culture. Ah... honestly before the online tutoring everything about Taiwan, Taiwanese people or Taiwanese culture, I just look the people, the Taiwanese people. The action they do around the NTUST campus only. But now with the online tutoring, of course, I have chance to know the people, the culture from other area of Taiwan. ... Ah... of course the difference, from Vietnam my country and Taiwan of course have some difference. The food as well, ah... honestly when I come here, I can't familiar with the food here. It's too sweet and a lot of oil and I don't like it and sometime I think like, yeah, it's very hard to eat. But my friend, my Taiwanese friend already recommend me a lot of famous food here and I think that a lot of food I never taste so I need to taste more before I come to the final conclusion about food in Taiwan. (T1, video reflection)

Through the online tutoring, the tutors could become more open-minded toward the culture of Taiwan.

### **Other cultural aspects**

Apart from exchanging culture based on the topics provided, some tutors also observed some cultural differences in education between their country and Taiwan. For instance, a tutor stated that:

Students are also very respectful to the teacher, [pause] oh but one thing, I feel that my student is sometimes more active than the student in my country because sometimes we have small talk about her daily life. She spent part of her week playing some sport. I don't think it's really common for Vietnamese student. That's a good point for Taiwanese student. To develop themselves in terms of mentality and physicality. (T03, video reflection)

Another tutor also made a similar comment:

So in the cultural aspect, I think Indonesia and Taiwan have slightly different culture especially education. Here in Taiwan I see that the student do many things in the school and in the evening time but Indonesia we go back from school way sooner than in Taiwan. (T25, video reflection)

Although language barrier was a hindrance to effective cultural exchange, some tutors tried to overcome the language barrier by learning some Chinese words to be able to communicate with their tutee. As one tutor stated:

One interesting thing that I learned from this online tutoring program is

that this program has actually helped me to make me realize that you can actually still share your country's culture and learn about other country's culture even though there is a language barrier. So, I think that the language barrier has brought us closer actually because she realized that I am very confident enough to talk in Chinese even my Chinese is poor and with that in mind I think it helps her to build her confidence too so that she can [pause] briefly speak English even though she knows that she will make some mistakes most importantly in the pronunciations. But, [pause] she knows that both of us are still trying to learn a new language and it's hard and so it's okay to make mistakes. And that actually what makes her feeling more comfortable and more confident to talk English in front of me. (T16, video reflection)

Since none of the international students was a native speaker of English, or could speak Chinese fluently yet communicated in both languages confidently, this encouraged the tutees to speak up more.

The DLC project was useful in facilitating cultural exchange as evidenced by comments from the participants. Some of the comments show that through the cultural exchange, the stereotypes the some of the tutors had about Taiwan were challenged. Some tutors were more willing to self-disclose information about their personal lives. This could have been easier because of using the online environment. They even observed cultural differences beyond the topics assigned meaning they appreciated the usefulness of the project.

## Discussion

### Tutoring Experiences

This study describes international students' experiences in an online tutoring project, and effectiveness of the online tutoring program for the development of cultural awareness. The findings indicate that the international students learnt not only how to teach generally but also how to teach online despite the fact that most of them were not training to be teachers. The results showed that the tutors considered the online tutoring project beneficial for acquiring and improving on teaching skills (both online and teaching in general), language learning, peer encouragement, cultural exchange, helping tutees make boost their confidence to speak English and developing friendships and relationships with the tutees, with other tutors and with the project support team who were students from Taiwan. In Cifuentes and Shih's (2001) study, similar results were obtained after an e-mail correspondence partnership was conducted between American preservice teachers and Taiwanese university students to prepare the preservice teachers for online teaching and learning. The online teaching experiences provided the preservice teachers with online teaching experience, time for individualized instruction,

authentic language learning and cultural exchange (Cifuentes & Shih, 2001). Our results also confirm ChanLin, Lin, and Lu's (2012) conclusion that the online tutoring experience provided the university students with an opportunity to build friendships with the learners in remote areas. The students were also more willing to make adjustments according to their learners' needs since the tutoring provided them with an opportunity to have an experience in a socio-cultural diverse setting (ChanLin et al., 2012).

Although some of the tutors in this program were not trainee teachers, the focus of the project was cultural exchange and not formal teaching, and thus their lack of pedagogical skills could not impede their engagement with the tutees in terms of sharing culture. Hence the approach taken in this project can be scaled and replicated as deemed appropriate. Since some of the tutors were not training to be teachers, we provided them with some basic training on knowledge sharing such as preparation for the lesson prior to them engaging with the tutees. As this project was founded, organized, and administered by a teacher training centre, we have the knowledge and background on how to train trainee teachers. Therefore, based on the findings, this model could be effective for future cultural exchange programs. This is a social action project which aims to create a social impact to the community. As a start, we provide some opportunities to the international students with the hope that with time, they will encourage others to join. By including other students, we try to attract many participants so that we can encourage more potential people to this field and also increase their awareness of social responsibility. To overcome the digital divide and some of the challenges experienced by the rural students such as having few qualified teachers, we also recommend the use of online teaching for formal learning but so as not to compromise the quality of online teaching for the rural school children, we suggest that Taiwanese trainee teachers are paired with the rural elementary school children.

While this research focussed on the experiences of tutors, we appreciate that tutee experiences could as well have been worth exploration in relation to evaluating the success of the project. As this has already been explored in the recent past by studies such as Cheng et al., (2007), we dedicated this paper to the experience of tutors. In the follow-up study, we hope to investigate tutees' experience among other parameters for the sake of informing design of tutee centric online tutoring platform that facilitates cultural awareness and cultural exchange from the tutees perspective.

### **Cultural Awareness**

The results indicated that the DLC project provided an opportunity for the international students to learn about the culture of Taiwan. In their reflections,

the tutors indicated that the project was useful for them since it gave them an opportunity to learn about the people of Taiwan and their culture. This in turn made them to appreciate their own culture more, which some of them had ignored. The project was also useful for the rural children to learn about and be exposed to other cultures since they have few opportunities to experience other cultures. Through the exchange, the tutors learnt about the similarities between their cultures and the culture of Taiwan based on the given topics. This confirms Angelova and Zhao's (2015) claim that learning about other cultures provokes awareness of one's own culture and conclusion that computer-mediated communication tools are useful for learning about a target culture. Most of the tutors mentioned that they would like to participate in the DLC project again in future. However, they indicated that they would like to be paired with students who could be able to communicate in English. This result also confirms Zeiss and Isabelli-García's (2005) suggestion that the Internet can be suitably employed to implement culture-based activities.

### **Effectiveness of Technology Use**

Although most tutors indicated that they faced the challenge of language barrier since their tutees were either shy to speak in English or had low English speaking ability, through the use of technology, they were able to navigate through this challenge. By the end of the program, they mentioned in their reflections that they employed various strategies such as use of google translate to be able to communicate with their tutees. Some even mentioned that their tutees got motivated to speak in English when they realized their tutors were trying to use Chinese even though they did not know any Chinese before taking part in the project. This implies that language barrier is not a challenge to effective online tutoring and cultural exchange. Through application of technology, some of the challenges faced in traditional tutoring settings may be overcome. As ChanLin et al. (2012) concluded, through interacting with students who had a different culture from theirs, the tutors learnt to deal with real-life problems such as the language barrier issue which could hamper effective communication and interaction. None of the tutors dropped out of the project due to the language issue instead as noted earlier, they looked for ways to overcome this problem using technology.

### **Recommendations for Future Projects**

Based on statements made by the tutors and our own observations, the following suggestions are recommended for similar projects in future:

1. Try as much as possible to avoid technical challenges due to Internet speed and connection to ensure a smooth interaction between the tutors and tutees hence avoid frustration. Although this may not be possible because it is a limitation

in the rural area. Therefore, we recommend that the tutors be made aware of the problem and prepare for the challenge.

2. Pair tutors with tutees who could speak English for effective communication and interaction so that tutors do not feel overburdened when preparing teaching materials and tutees do not become uncomfortable since they feel they cannot communicate. Since most tutees levels of English are low, we recommend providing tutors with adequate background information about the tutees they will be interacting with, for instance, their English speaking ability so that they do not get frustrated when they face challenges like communication problems during the tutoring sessions. We also recommend that special training be provided to the tutors regarding how to communicate with people who have low communication abilities.

3. Communication from the tutee's side in advance in the event that a tutee will be absent for a given session so as to avoid causing frustration for tutors who take time to prepare for a session only for the student not to show up. Therefore, we recommend that the teachers from the tutees side be more proactive.

4. Teachers of the tutees should encourage them to be active participants in the tutoring sessions, for instance, ask questions and respond to questions raised by their tutors, actively participate in other activities conducted during the tutoring sessions and use this rare opportunity to practice their English speaking skills in order to improve.

5. Alternatively, to encourage tutee active participation, make the exchange to account for a part of their grade.

## Conclusion

This study aimed to contribute to the emerging literature on online teaching and learning experiences and on the use of online tutoring to facilitate cultural exchange. The findings indicated that participants enjoyed the tutoring experience and gained some skills on how to tutor online. They also gained some benefits such as being able to make friends with the tutees, learn some Chinese from the tutees, and learn about the culture of Taiwan from the tutees. Since they also shared about their culture to the tutees, they were able to appreciate their culture more. Our study demonstrates that although we have other ways of learning about culture, we could leverage the advantages of the Internet and technology to shorten distance and costs to learn about the culture of a people.

One limitation of the study is the small number of participants ( $n = 39$ ) and they all came from one university. Therefore, the results may not be generalizable to larger populations and to international students in other universities. Future studies may benefit from having more participants and including international



students from various universities in Taiwan. A second limitation is that the study was conducted for only one semester. In future, we recommend that longitudinal studies be conducted to clearly assess and understand the role of online tutoring in facilitating cultural learning. A third limitation is that the tutors used in this project were not training to be teachers therefore their experiences may only be generalized to participants with similar backgrounds. Future studies may benefit from using trainee teachers as participants so that the results could be used to improve on the growth of the teachers in online teaching and learning settings. A fourth limitation is that only tutor experiences and cultural awareness were assessed. Future studies could assess both tutor and tutee experiences and cultural awareness to evaluate if the project is effective for the tutees too. We also recommend further research to assess whether such programs could be useful and effective beyond the educational setting.

A pedagogical implication of the study is that because the international students appreciated the opportunity given by the project to learn culture, universities and schools could incorporate such online tutoring projects especially for new international students to help them learn about and get exposed to the culture of the country they are studying in so that they can easily adapt to the culture. They could also use such projects for learning the local language. For the local schools, the students could use this opportunity to get an exposure to other cultures around the world in the comfort of their country. A second pedagogical implication is that, although the findings are applicable only to the situation the study examined, they may be used to improve on other similar situations which involve interaction of people from different cultures in an online teaching setting.

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# 教育資料與圖書館學 學術出版倫理聲明

Version 2

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林信成、陳瑩潔、游忠諺，「Wiki協作系統應用於數位典藏之內容加值與知識匯集」，教育資料與圖書館學 43卷，3期(2006)：285-307。【Sinn-Cheng Lin, Ying-Chieh Chen, and Chung-Yen Yu, “Application of Wiki Collaboration System for Value Adding and Knowledge Aggregation in a Digital Archive Project,” *Journal of Educational Media & Library Sciences* 43, no. 3 (2006): 285-307. (in Chinese)】

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林雯瑤、邱炯友(2012)。教育資料與圖書館學四十年之書目計量分析。教育資料與圖書館學，49(3)，297-314。【Lin, Wen-Yau Cathy, & Chiu, Jeong-Yeou (2012) A bibliometric study of the *Journal of Educational Media & Library Sciences*, 1970-2010. *Journal of Educational Media & Library Sciences*, 49(3), 297-314. (in Chinese)】

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